ORDER NO. EMID891257
A4 5467

Service Manual

Electronic Organ
SX-GN9/GN9K

(N), (MC), (EN), (EI), (EH), (EB), (EF), (EZ),
(EW), (EP), (EK), (XL), (XR), (XS), (XD), (X)

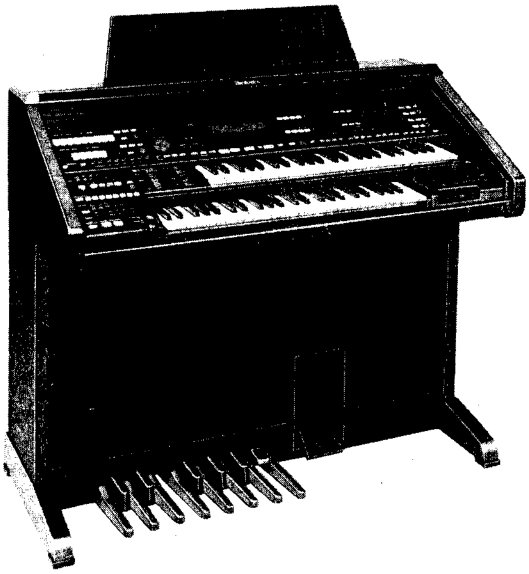

Photo: SX-GN9K

AREAS

(N):	Japan	(EP):	Spain
(MC):	Canada	(EK):	the United Kingdom
(EN):	Norway, Sweden, Denmark, Finland	(XL):	New Zealand
(EI):	Italy	(XR):	Australia
(EH):	Holland	(XS):	Malaysia, Singapore, South Africa
(EB):	Belgium	(XD):	Saudi Arabia
(EF):	France, Austria	(X):	the Middle East, Indonesia, Hong Kong, the Philippines, Taiwan, Thailand
(EZ):	Germany		
(EW):	Switzerland		

■ Information

There are two identical models are available as SX-GN9 and SX-GN9K and all specifications are the same in both models except cabinet parts and panel parts.
Idetify an unit with model number which available on the name plate on the rear board and perfrom proper service.

■ Specifications

KEYBOARD		UPPER KEYBOARD: 49 KEYS, LOWER KEYBOARD: 49 KEYS PEDAL KEYBOARD: 13 KEYS, FULL BASS PEDAL: 1 KEY
PRESET SOUND	ORCHESTRAL CONDUCTOR (UPPER/LOWER)	VOLUME, TAB & ORGAN, POLY, SPECIAL, EXTRA, MIDI
	SOUND SELECT (UPPER/LOWER)	PIANO 1, 2, ELECTRIC PIANO, HARPSICHORD, MALLET, JAZZ GUITAR, ACOUSTIC GUITAR, ELECTRIC GUITAR, STRINGS, VOCAL, BRASS, TROMBONE, TRUMPET, HORN, SAX, REED, CLARINET, FLUTE, VIOLIN, ACCORDION, SYNTH BRASS, EXTEND 1, 2, 3
	TAB	UPPER: FLUTE 16′, 8′, 5-1/3′, 4′, 2-2/3′, 2′, 1′ PERC 4′, 2-2/3′, LOWER: FLUTE 8′, 4′, 2-2/3′, 2′, 1′
	ORGAN	UPPER: 9 PRESETS, LOWER: 5 PRESETS
	BASS	BASS 16′, 16′ +8′, 8′, ACOUSTIC, ELECTRIC, CHOPPER, STRINGS, SYNTH 1, 2, 3, 4, 5, PIPE ORGAN 1, 2, TUBA, TIMPANI
SOUND EDIT	PARAMETERS	TONE ASSIGN MODE (NORMAL, DUAL, DUET, TRIO), TONE SELECT, VOLUME (LEVEL, KEY BALANCE), PITCH (KEYSHIFT, DETUNE), REPEAT (SPEED), ENVELOPE (ATTACK & DECAY, RELEASE), VIBRATO (DEPTH, SPEED, DELAY), TREMOLO (SPEED), AUTOBEND & TRILL (PATTERN, DEPTH, SPEED), PITCH RELEASE (DEPTH, TIME), GLIDE (ON/OFF), INITIAL TOUCH (VOLUME, AUTOBEND & TRILL), AFTER TOUCH (VOLUME, MODULATION), SUSTAIN (ON/OFF), SOUND NAME
	MEMORY	UPPER 12, LOWER 12, BASS 8

EFFECT	EFFECT 1	SOUND SELECT, TAB & ORGAN (UPPER & LOWER)
	EFFECT 2	SOUND SELECT (UPPER & LOWER)
	REVERB	SOUND SELECT, TAB & ORGAN (UPPER & LOWER), DEPTH
	TOUCH	SOUND SELECT (UPPER & LOWER)
	SUSTAIN	SOUND SELECT, TAB & ORGAN (UPPER & LOWER), BASS, LEVEL
	TREMOLO	TAB & ORGAN (UPPER & LOWER), SLOW/FAST
	PITCH BEND	○ (PITCH BEND WHEEL)
	MODULATION	○ (ON/OFF)
TRANSPOSE		G-C-F♯
TECHNI-CHORD		PROGRAM (CLOSE, OPEN 1, 2)
BACKGROUND SOUND		THUNDER, WIND, BIRD, STREAM, WIND CHIME, WAVE, CHURCH BELL, SPECIAL, FADE OUT
RHYTHM	PATTERN	MARCH, POLKA, COUNTRY, WALTZ, TANGO, CHA-CHA, RHUMBA, FAST LATIN, BIG BAND, JAZZ COMBO, MODERN JAZZ, DIXIE, JAZZ WALTZ, SHUFFLE, SAMBA, BOSSANOVA, 8 BEAT 1, 2, HARD ROCK, ROCK'N' ROLL, ROCK BALLAD, SAMBA ROCK, SALSA, REGGAE, 16 BEAT 1, 2, 16 BEAT BALLAD, JAZZ ROCK, FUNK, SWING ROCK, DISCO 1, 2, VARIATION
	CONTROL	START/STOP, SYNCHRO & BREAK, FILL IN 1, 2, INTORO & ENDING, TEMPO
	KEYBOARD PERCUSSION	48 KEYS
	MANUAL PERCUSSION	PAD 1, 2

Technics

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Central P.O. Box 288, Osaka 530-91, Japan

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Division of Matsushita Electric
Corporation of America
50 Meadowland Parkway,
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Panasonic Sales Company,
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of Puerto Rico, Inc.
San Gabriel Industrial Park
65th Infantry Ave. Km. 9.5
Carolina, P.R. 00630

541

AUTO PLAY CHORD		FINGERED 1, 2, MEMORY
ARRANGER		ACCOMP 1, ACCOMP 2 & 3, DRUMS
ONE TOUCH PLAY		○ (ONE TOUCH PLAY, MUSIC STYLE)
VOICE SETTING COMPUTER		SET, 1-16
COMPOSER		5 TRACKS (ACCOMP 1, 2, 3, BASS, DRUMS), MEMORY...8 INPUT MODE (REAL TIME, STEP) EDITING FUNCTIONS (COPY, RECORDING CHORD SELECT)
SEQUENCER	TRACK	8×2 TRACKS
		PART: UPPER, LOWER, BASS, CHORD, UPPER POLY, LOWER POLY, DRUMS, CONTROL
		STORAGE CAPACITY: APPROX. 15,000 NOTES INPUT MODE: REAL TIME, STEP EDITING FUNCTIONS: PUNCH IN/OUT, TRACK ASSIGN, SONG ALL CLEAR, TRACK CLEAR, TRACK MERGE, MEASURE DELETE, MEASURE ERASE, MEASURE INSERT, MEASURE COPY, VELOCITY CHANGE, QUANTIZE, DEMONSTRATION TUNE
MUSICAL DIRECTOR		LIQUID CRYSTAL DISPLAY: 40 LETTERS×4 LINES, CONTRAST
CONTROL		PAGE, TEMPO/PROGRAM DIAL, BALANCE, VOLUME
MIDI		PART (12 PARTS), BASIC CHANNEL (1~16), MIDI INPUT SELECT (CONDUCTOR/DIRECT, APC/DIRECT), MIDI OUTPUT SELECT (KEYBOARD/CONDUCTOR, TECHNI-CHORD ON/OFF, APC/CHORD) MIDI FUNCTION SELECT: <COMMON> INITIAL, NOTE ONLY, TRANSPOSE OUT, PROGRAM CHANGE MODE, SONG SELECT, REAL TIME COMMAND, MIDI CLOCK, MIDI LOAD <PART> OCTAVE SHIFT, PROGRAM CHANGE, VSC PROGRAM CHANGE, SUSTAIN, AFTER TOUCH, PITCH BEND, MODULATION, VOLUME, TREMOLO, EFFECT 1, EFFECT 2, EXPRESSION, INTRO, MIDI APC, DRUMS TYPE, LOCAL CONTROL, MIDI OUT, VSC PROGRAM CHANGE, VSC LOCAL CONTROL
EXTERNAL MEMORY		DIGITAL DISK RECORDER
TERMINALS	MIDI	IN, OUT, THRU
	OTHERS	LINE OUT ...output level 300mV, 600Ω 2CH output (L, R/R+L), MIX ON/OFF SEPARATED LINE OUT...output level 500mV, 600Ω TAB, BASS, DRUMS (L, R/R+L), EXP/DIRECT AUX IN ....input level 150mV, 10KΩ L, R/R+L terminals PHONES .....use headphones with 16Ω impedance
OTHERS		POWER SWITCH, MAIN VOLUME, EXPRESSION PEDAL, FOOT SWITCH (RIGHT/LEFT), KNEE LEVER
OUTPUT		200W
SPEAKERS		30cm×1, 20cm×3, TWEETER×2, 13cm×6cm×2 (MONITOR)
POWER REQUIREMENT		550W 460VA (CANADA) AC 220V 50Hz/60Hz EUROPE (EXCEPT FOR ENGLAND) AC 120V 60Hz NORTH AMERICA AC 120/220/240V 50Hz/60Hz OTHERS
DIMENSIONS (W×H×D)		GN9: 124.5cm×122cm×60.1cm (49-1/32"×48-1/32"×23-21/32") GN9K: 122.3cm×120cm×60.1cm (48-5/32"×47-1/4"×23-21/32")
NET WEIGHT		GN9: 96Kg (211.6lbs) GN9K: 90Kg (198.4lbs)

• Specifications are subject to change without notice for further improvement.

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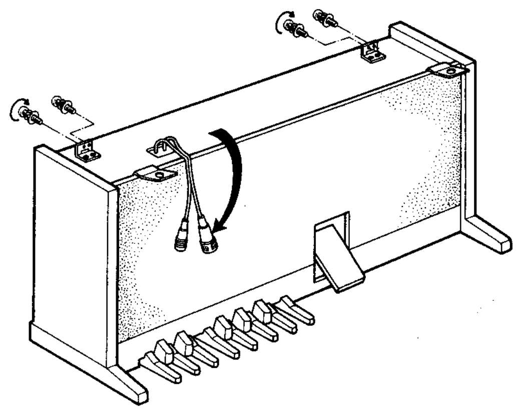
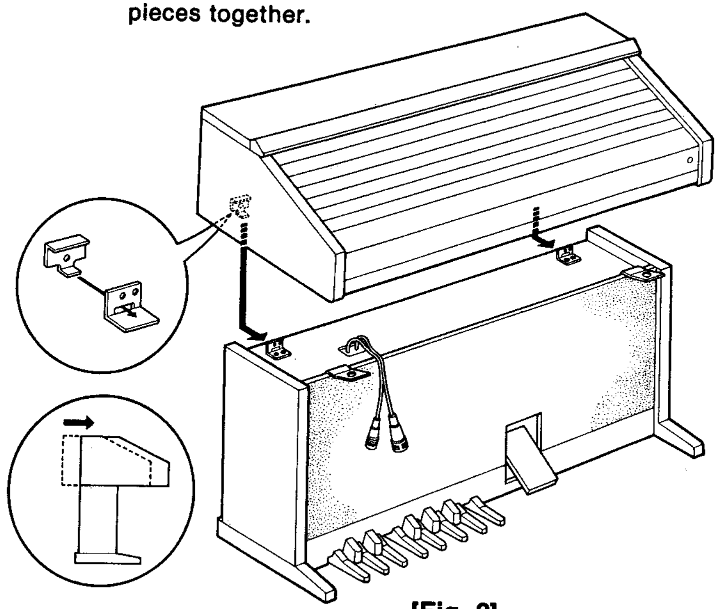
HOW TO ASSEMBLE THE ORGAN

1 On the lower stand part, remove the four bolts from the metal joints.
Lay the cords to the front of the stand.



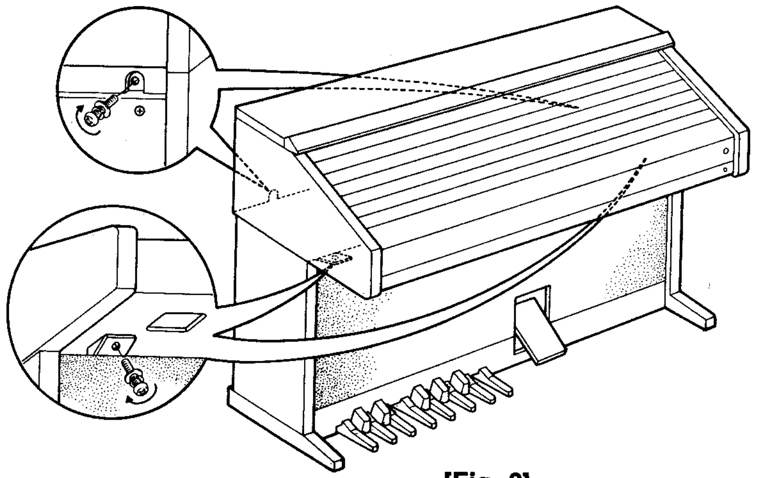
[Fig. 1]

2 Place the upper organ part on the lower stand part, making sure to fit the metal pieces together.



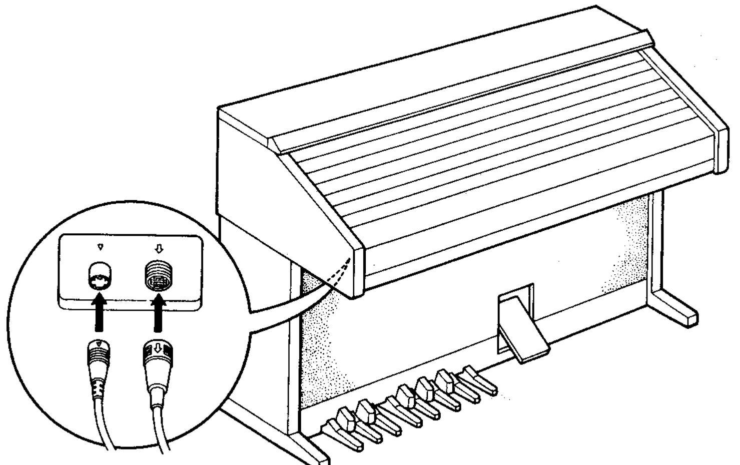
[Fig. 2]

3 Using the four bolts removed in step 1, secure the upper organ part to the lower organ part as shown in the figure.



[Fig. 3]

4 Connect the two cords from the lower stand part to the respective terminals on the underside of the upper organ part. Unlock the cover with the accessory key.



[Fig. 4]

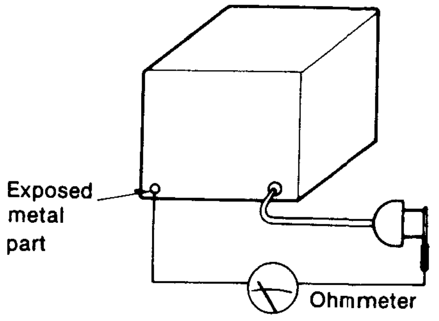
SAFETY PRECAUTION (This "safety precaution" is applied only in U.S.A.)

• Safety Precaution

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistanc test to prevent the customer from being exposed to a shock hazard.

• Insulation Resistance Test

1. Unpulg the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screw heads, connectors, control shafts, handle brackets, etc.. Mesurements should range from 4MΩ to infinity to all exposed parts.



Resistance=4MΩ to ∞

INITIAL SETTING

1 Initial setting function will be used to return to the Original Factory setting mode, reset the customer setting and irregular operations with following methodes.

1. Turn the POWER switch to off.
2. Then, Turn on the POWER switch while pressing 16 BEAT 1, 16 BEAT 2, and 16 BEAT BALLAD buttons at the same time.

NOTE:
All stored data in the SEQUENCER, COMPOSER AND OTHER will be initialized with this operation.

2 Initial setting function also be able to reset limited function of the stored data or all data as same purpose as section **1** above. (ALL, COMPOSER, SOUND MEM, or SEQUENCER is selectable.)

1. Set the MUSICAL DIRECTOR to MEMORY & CONTROL mode.
2. Change the MUSICAL DIRECTOR mode to INITIAL SETTING mode with PAGE button to call 2nd PAGE.

[MEMORY & CONTROL MODE] PAGE 2

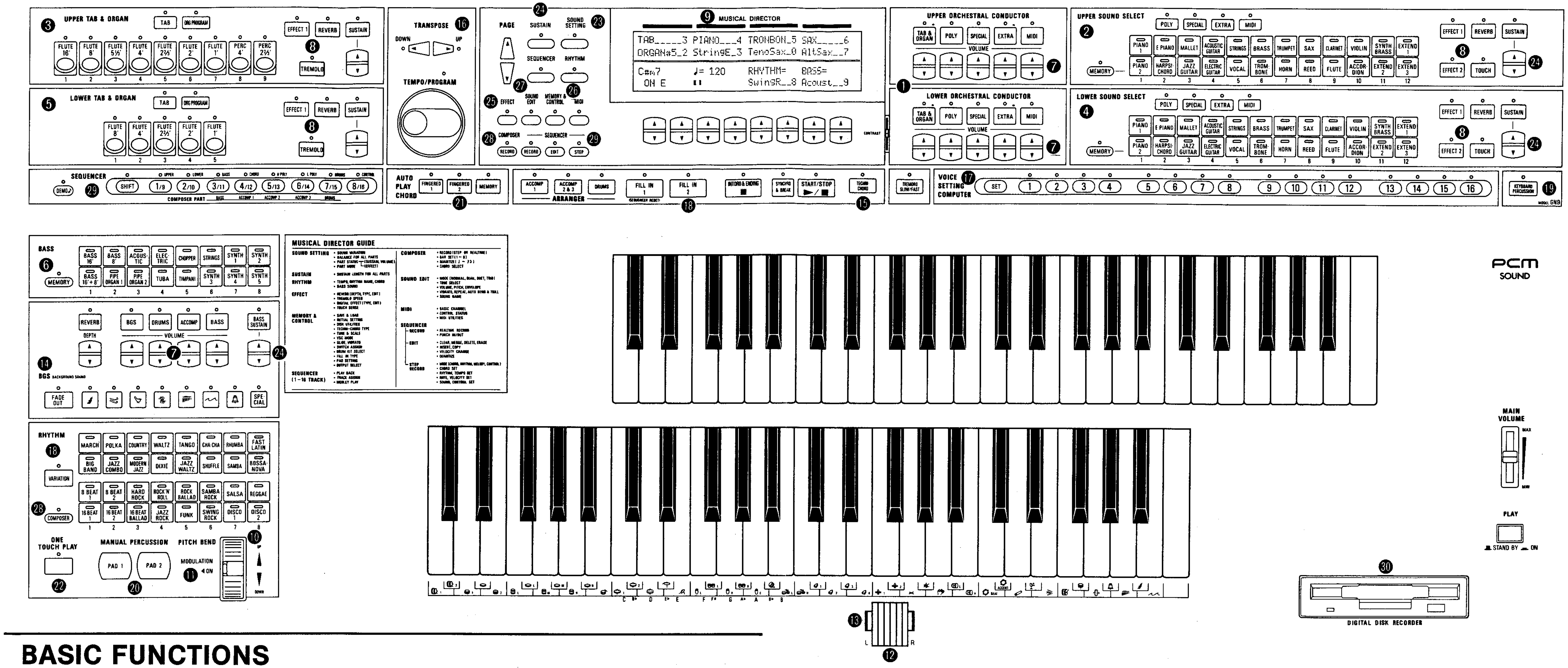
```
2 : INITIAL  SETTING
        ALL            [SET]
   ①      ②      ③      ④
```

3. The functions to be initialized are selected
   ② buttons.
   ALL:
   Initializes all functions such as the sta
   sounds and effects, VOICE SETTING COMP
   SOUND SELECT storable memories, COMP
   and SEQUENCER.
   COMPOSER:
   Initializes the **COMPOSER** memories an
   then to the factory presets.
   SOUND MEM.:
   Initializes the **SOUND SELECT** storable me
   of all parts and sets them to the factory pre
   SEQUENCER:
   Initializes the memory contents of all track
4. Press ④ button to change to the following
   firmation display.

```
2 : INITIAL  SETTING
   SURE?        [NO] [YE
   ①      ②      ③      ④
```

- Press ④ button for [YES] to execute the i
  ization procedure.
- Press ③ button for [NO] to cancel the i
  ization procedure.

ARRANGEMENT OF CONTROL PANEL


UPPER TAB & ORGAN
LOWER TAB & ORGAN
TRANSPOSE
TEMPO/PROGRAM
PAGE
MUSICAL DIRECTOR
UPPER ORCHESTRAL CONDUCTOR
LOWER ORCHESTRAL CONDUCTOR
UPPER SOUND SELECT
LOWER SOUND SELECT
SEQUENCER
AUTO PLAY CHORD
ARRANGER
VOICE SETTING COMPUTER
BASS
BGS
RHYTHM
MUSICAL DIRECTOR GUIDE
ONE TOUCH PLAY
MANUAL PERCUSSION
PITCH BEND
PCM SOUND
MAIN VOLUME
PLAY
DIGITAL DISK RECORDER

BASIC FUNCTIONS

❶ ORCHESTRAL CONDUCTOR
These buttons allow you to select groups of sounds, or parts, and their effects instantly. The upper and lower keyboard parts are selected respectively with the **UPPER** and **LOWER ORCHESTRAL CONDUCTOR**. The volume for each part is adjusted with the respective **VOLUME** buttons in this section.

❷ UPPER SOUND SELECT
With this block of buttons, you select the sound for each of three sound groups (parts). First you select a part (**POLY, SPECIAL** or **EXTRA**, and then you select one of the many preset sounds for that part. Store a different sound for each part. When a part is selected in the **UPPER ORCHESTRAL CONDUCTOR**, the sound you set for that part is selected for the upper keyboard. **MEMORY** buttons are for storing unique sounds you create yourself with the **SOUND EDIT** feature. The volume of each part is adjusted with the respective **VOLUME** buttons in the **UPPER ORCHESTRAL CONDUCTOR.**

❸ UPPER TAB & ORGAN
TAB sounds are selected for the upper keyboard by turning on the **TAB & ORGAN** button in the **UPPER ORCHESTRAL CONDUCTOR**. Included are the flute and percussive sounds, plus tremolo, sustain, reverb and **EFFECT 1** effects. When the **ORG PROGRAM** button is on, the programmable tab buttons are used to select 9 organ sounds (from 17 factory-preset sounds). The volume is adjusted with the respective **VOLUME** buttons in the **UPPER ORCHESTRAL CONDUCTOR.**

❹ LOWER SOUND SELECT
Sounds are selected for the lower keyboard parts in the same way as for the **UPPER SOUND SELECT** parts. The lower keyboard sounds are used mostly for accompaniment.

❺ LOWER TAB & ORGAN
Select these sounds for the lower keyboard by turning on the **TAB & ORGAN** button in the **LOWER ORCHESTRAL CONDUCTOR**. Like the **UPPER TAB & ORGAN** buttons, the sounds can be combined or selected individually.

❻ BASS
These are the sounds for the pedal keyboard. **MEMORY** buttons are for storing unique sounds you create yourself with the **SOUND EDIT** feature. The **BASS** sound volume is adjusted with the respective buttons in the separate **VOLUME** section.

❼ VOLUME
The volumes for the upper and lower keyboard parts are controlled with the corresponding **VOLUME** buttons in the respective **UPPER** and **LOWER ORCHESTRAL CONDUCTOR.** The **BASS** volume is adjusted with the **BASS** buttons in the separate **VOLUME** section.

❽ Effects
The **EFFECT 1, TREMOLO, SUSTAIN** and **REVERB** effects are turned on and off for the selected upper and lower keyboard sounds. For the **SOUND SELECT** sound, the **TOUCH** effect and **EFFECT 2** are also available.

❾ MUSICAL DIRECTOR
In the normal mode, the **MUSICAL DIRECTOR** indicates the selected sounds, volumes, rhythm, tempo, and all other information about the panel settings. The display is also used for setting the various **SOUND SETTING, SUSTAIN, EFFECT** and **MEMORY & CONTROL** functions. The amazing number and range of settable functions makes the GN series organ truly an instrument which you can fashion to fit exactly your particular playing style and tastes. And finally, the **MUSICAL DIRECTOR** is your key to programming when using the **SOUND EDIT, COMPOSER** and **SEQUENCER** features of your organ. The **CONTRAST** is adjusted with the sliding control.

❿ PITCH BEND
With the **PITCH BEND** wheel you can change the pitch continuously as you play. The wheel returned automatically to the center position when you release your hand.

⑪ **MODULATION**
When the **MODULATION** switch is on, a vibrato is applied to the sounds.

⑫ **Expression pedal**
Increase and decrease the loudness of all the organ sound as you play to add expression to the music.

⑬ **Glide control**
Lower the pitch of the organ by one half-tone or whole tone by pressing the left foot switch. This is used, for example, to get the Hawaiian guitar effect.

⑭ **BGS**
Eight unique background sounds add special like and interest to your performance. The **FADE OUT** button is pressed once for slowly diminishing background sound, twice for immediate cut-off. The volume for **BGS** is adjusted with the respective buttons in the separate **VOLUME** section.

⑮ **TECHNI-CHORD**
Chord notes played on the lower keyboard are added to melody notes played on the upper keyboard. Choose from four harmonic styles.

⑯ **TRANSPOSE**
C is the standard setting, but you can raise or lower the key of the entire organ with the two buttons. The transposed key is shown on the normal mode display of the **MUSICAL DIRECTOR**. The two buttons are also used to move the cursor on the display when assigning names to your recorded creations or when step-recording/correcting **COMPOSER** and **SEQUENCER** performance data.

⑰ **VOICE SETTING COMPUTER**
Set up the sounds and effects for the upper, lower and pedal keyboards, and then store them in these 16 buttons for instant recall as you play. You can expand the range of the storable settings to include rhythm selection, tempo setting and more.

⑱ **RHYTHM**
Select one of the various preset rhythms and start it instantly with the **START/STOP** button. Other features which enhance the **RHYTHM** unit are **SYNCHRO & BREAK, INTRO & ENDING, FILL IN, ARRANGER** and a foot switch. The volume is adjusted with the **DRUMS** buttons in the **VOLUME** section.

⑲ **KEYBOARD PERCUSSION**
One press of the **KEYBOARD PERCUSSION** button transforms your lower keyboard into a whole band of percussive instruments and special sounds. The keys are picture-coded for quick and easy selection.

⑳ **MANUAL PERCUSSION**
Either of the two **PAD** buttons can be pressed during your performance to produce a percussion sound. Use the preset sounds, or store the desired **KEYBOARD PERCUSSION** sounds. The **PAD** switches can also be programmed for other functions, such as rhythm start/stop.

㉑ **AUTO PLAY CHORD**
This feature is activated when the **FINGERED 1** or **FINGERED 2** button is turned on. A full chord and a bass note are automatically produced when you play a key on the lower keyboard. Play major, minor, seventh or minor seven chords and the bass note just by pressing one key. The volume for each part of the **AUTO PLAY CHORD (ACCOMP, BASS, DRUMS)** is adjusted with the respective buttons in the separate **VOLUME** section.

㉒ **ONE TOUCH PLAY**
With this special feature, you select a rhythm or type of music, and the appropriate sounds and effects are automatically set.

㉓ **SOUND SETTING functions**
Turning on this button readies the **MUSICAL DIRECTOR** for use as a controller to preset sounds, effects, volume, and mode setting for each part.

㉔ **SUSTAIN functions**
Turn this button on to set the sustain on/off status and sustain time for each part.

㉕ **EFFECT functions**
In the effect-setting mode, you use the **MUSICAL DIRECTOR** to set a wide range of functions, including type and depth of **REVERB**, tremolo speed, effect edit and touch effect.

㉖ **MEMORY & CONTROL functions**
The settable functions in this mode include memory initialization, **TECHNI-CHORD** harmony style, tuning, scale-effect, **VOICE SETTING COMPUTER** range, glide pitch-change, vibrato depth, switch assign, drum kit contents, fill-in pattern, and more.

㉗ **SOUND EDIT**
With this feature you select a preset sound, modity it until it sounds just the way you like it, and then store it in one of the memory locations. Edit and store up to 12 sounds for each of the **UPPER** and **LOWER SOUND SELECT** sections and up to 8 **BASS** sounds.

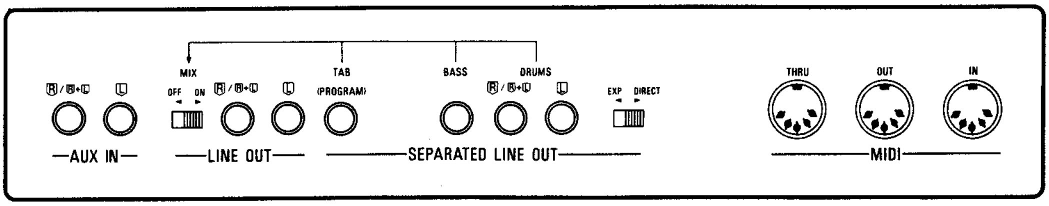
㉘ **COMPOSER**
Create original rhythm patterns, either in real-time or with the step method, or modify preset rhythms. Store up to 8 new rhythms in the reserved memory locations for instant recall as you play.

㉙ **SEQUENCER**
With this feature you can separately play and store the parts for an entire tune. Then have the hole ensemble performance played back automatically. This is a true 8-track sequencer, with full real-time recording, step recording and editing features. On the GN9 and additional 8 tracks are available for editing.

㉚ **Digital Disk Recorder SY-FD20**
The Digital Disk Recorder allows you to store up to 20 performances on a 3.5-in. 2DD memory disk.

TERMINALS

(On the rear panel)



■ AUX IN (input level 150mV, 10kΩ)

Use these inputs to connect the audio outputs of other audio equipment, such as a tape deck, VCR, tuner, or an audio mixer, for playback through the organ. This terminal runs through the expression pedal circuit and you can control the volume of the connected instrument with the expression pedal. If connecting a monaural line, connect it to the **R/R+L** terminal.

■ LINE OUT (output level 300mV, 600Ω)

Use these outputs to connect the audio output of the organ to other audio equipment, such as a tape deck, VCR, audio mixer, tone cabinets, or additional amplifier/speaker systems.

When the **MIX** switch is set to OFF, the **BASS** and **DRUMS** sections are disconnected from the **LINE OUT** terminals on the front and rear panel.

When not using the **SEPARATED LINE OUT** terminals, be sure the **MIX ON/OFF** selector is set to **ON.**

■ SEPARATED LINE OUT
(output level 500mV, 600Ω)

Use these outputs to connect the audio outputs of the **BASS, DRUMS** and **TAB** sections only to other audio equipment. The **TAB (PROGRAM)** terminal output will be set by **MEMORY & CONTROL** function PAGE 13 (program output part select), regardless **MIX ON/OFF** switch position.

When the **EXP/DIRECT** selectors is set to **EXP**, the outputs from the **BASS** and **DRUMS** terminals respond to expression pedal changes; when set to **DIRECT**, these outputs do not change in response to changes in the expression pedal.

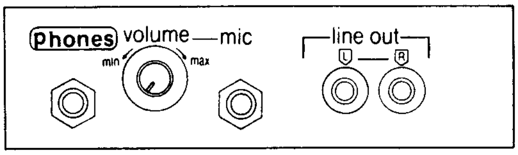
■ MIDI (Musical Instrument Digital Interface)

MIDI is standard specification that enables connection to equipment such as synthesizers and personal computers. Data transmission and reception are possible between the Technics organ and equipment provided with MIDI terminals.

IN:	The terminal that receives data from external equipment.
OUT:	The terminal that transmits data from the organ to external equipment.
THRU:	The terminal that transfers data from the **IN** terminal directly to other equipment.

- Use a 5-pin DIN cord (less than 15m long) for these connections.

(Below the lower keyboard)



PHONES (Use headphones with 16 ohm impedance.)
For silent practice headphones may be used. When plugged in, the organ's speaker system is automatically switched off, and the entire organ is heard only through the headphones.

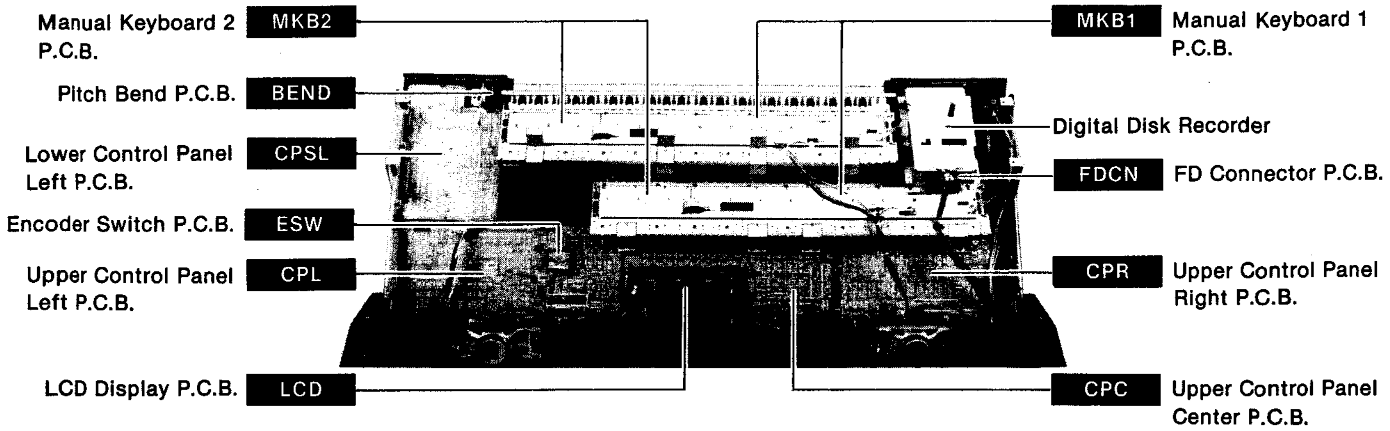
MIC (input level 7.5mV, 10kΩ)
The organ will accept a microphone of the uni-directional type. This type of microphone reduces feedback to the minimum.

MIC VOLUME balances instrumental or vocal sounds fed into the microphone with the loudness of the organ.

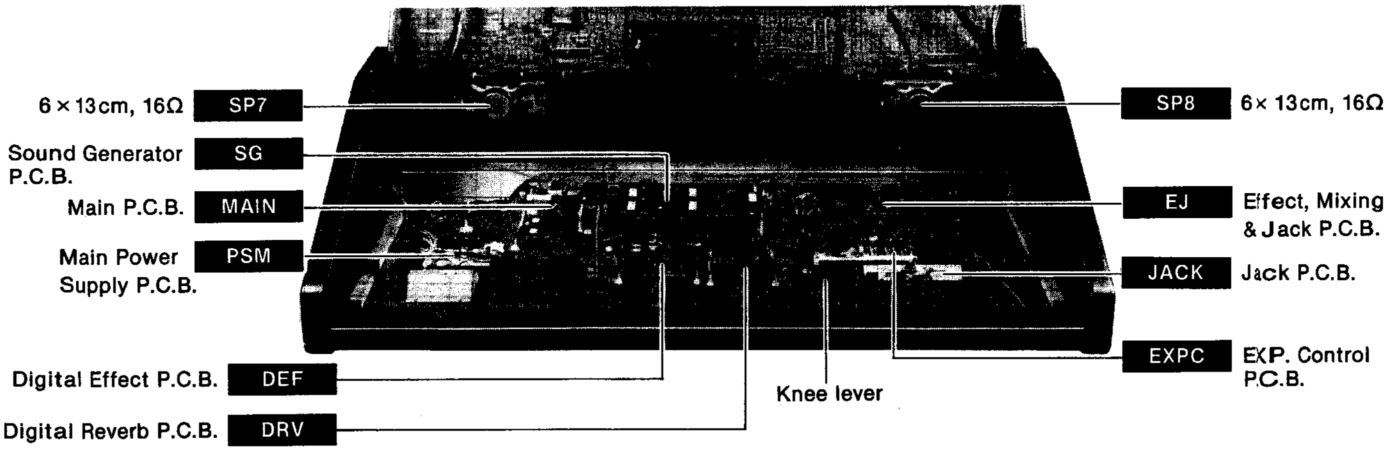
LINE OUT (output level 300mV, 600Ω)
Phono jacks are provided for 2-channel (L/R) output. Use these outputs to connect the audio output of the organ to other audio equipment, such as a tape deck, VCR, audio mixer, tone cabinets, or additional amplifier/speaker systems.

When the **MIX** switch is set to OFF, the **BASS** and **DRUMS** sections are disconnected from the **LINE OUT** terminals on the front and rear panel.

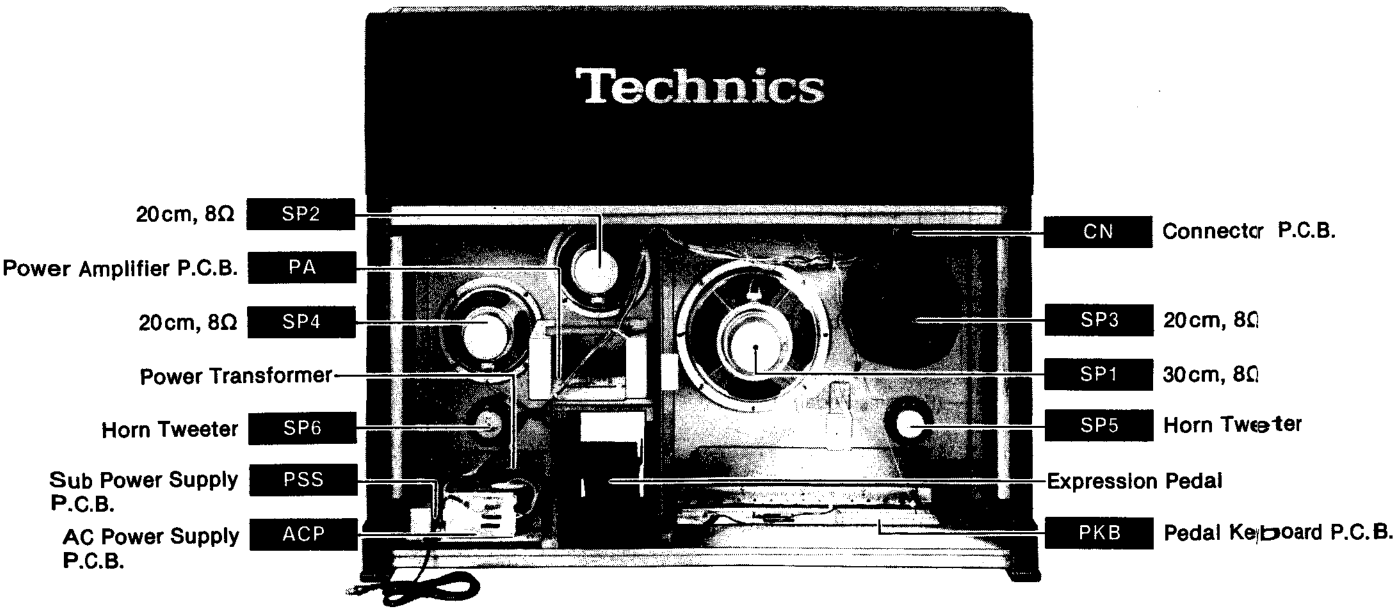
PARTS LOCATION


Manual Keyboard 2 P.C.B.
MKB2
Pitch Bend P.C.B.
BEND
Lower Control Panel Left P.C.B.
CPSL
Encoder Switch P.C.B.
ESW
Upper Control Panel Left P.C.B.
CPL
LCD Display P.C.B.
LCD
MKB1
Manual Keyboard 1 P.C.B.
Digital Disk Recorder
FDCN
FD Connector P.C.B.
CPR
Upper Control Panel Right P.C.B.
CPC
Upper Control Panel Center P.C.B.

[Photo-1]


6 × 13cm, 16Ω
SP7
Sound Generator P.C.B.
SG
Main P.C.B.
MAIN
Main Power Supply P.C.B.
PSM
Digital Effect P.C.B.
DEF
Digital Reverb P.C.B.
DRV
Knee lever
SP8
6 × 13cm, 16Ω
EJ
Effect, Mixing & Jack P.C.B.
JACK
Jack P.C.B.
EXPC
EXP. Control P.C.B.

[Photo-2]

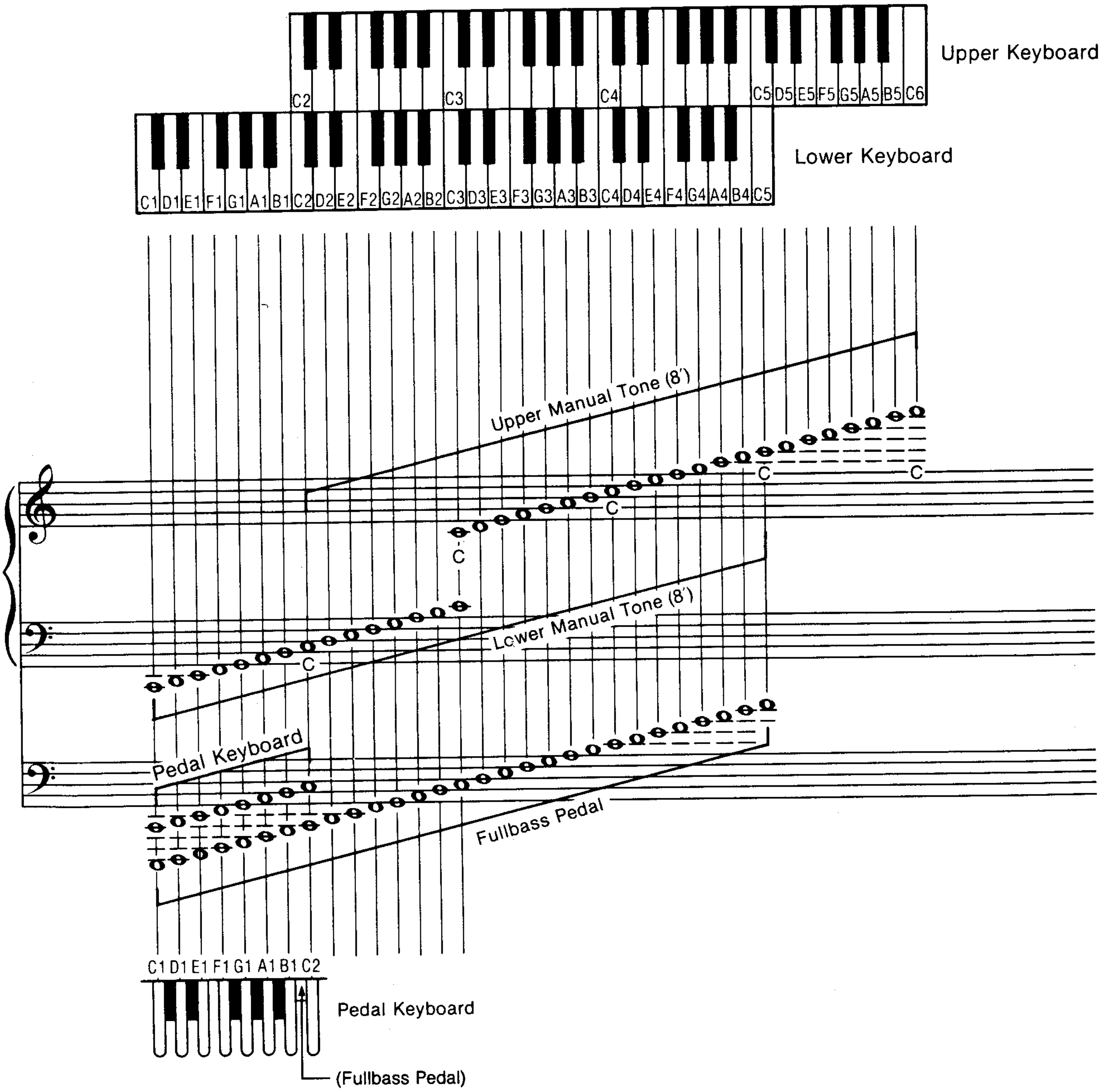

Technics
20cm, 8Ω
SP2
Power Amplifier P.C.B.
PA
20cm, 8Ω
SP4
Power Transformer
Horn Tweeter
SP6
Sub Power Supply P.C.B.
PSS
AC Power Supply P.C.B.
ACP
CN
Connector P.C.B.
SP3
20cm, 8Ω
SP1
30cm, 8Ω
SP5
Horn Tweeter
Expression Pedal
PKB
Pedal Keyboard P.C.B.

[Photo-3]

KEYBOARD RANGES

Upper Keyboard ....49 Keys (4 Octaves)
Lower Keyboard ....49 Keys (4 Octaves)
Pedal Keyboard ....13 Keys (1 Octave)+Fullbass Pedal

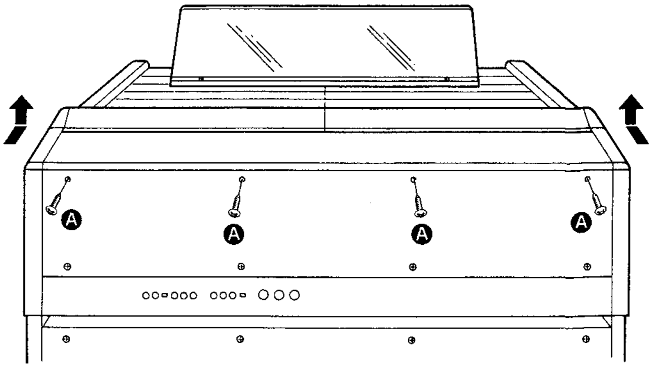
∗An 8-foot compass is used for each keyboard.


C2
C3
C4
C5
D5
E5
F5
G5
A5
B5
C6
Upper Keyboard
C1
D1
E1
F1
G1
A1
B1
C2
D2
E2
F2
G2
A2
B2
C3
D3
E3
F3
G3
A3
B3
C4
D4
E4
F4
G4
A4
B4
C5
Lower Keyboard
Upper Manual Tone (8')
C
C
C
C
Lower Manual Tone (8')
C
Pedal Keyboard
Fullbass Pedal
C1 D1 E1 F1 G1 A1 B1 C2
Pedal Keyboard
(Fullbass Pedal)

DISASSEMBLY INSTRUCTIONS

1 Top Cover

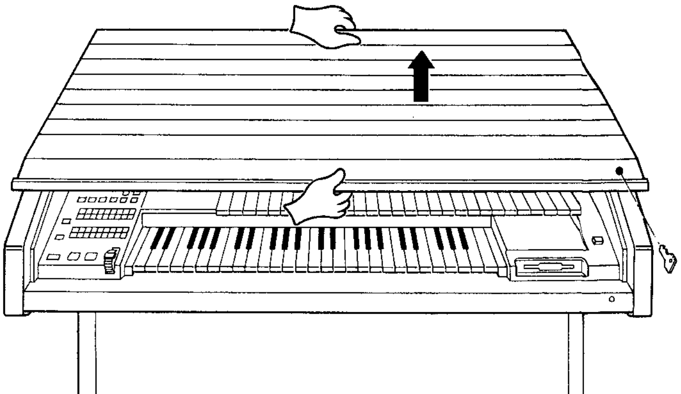
1. Remove the top cover holding screws located on the rear board. (Ⓐ 4 pcs.)
2. Remove the top cover, sliding it forward and lift.



[Fig. 5]

2 Sliding Cover

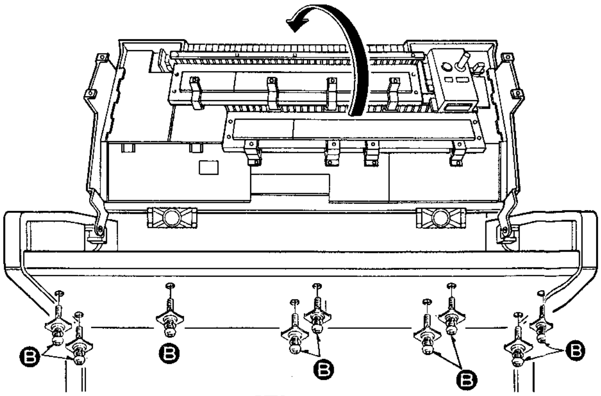
1. Remove the top cover. (See step 1.)
2. Unlock the sliding cover with the accessory key.
3. Remove the sliding cover in its fully closed position.



[Fig. 6]

3 Control Panel with Keyboard Unit

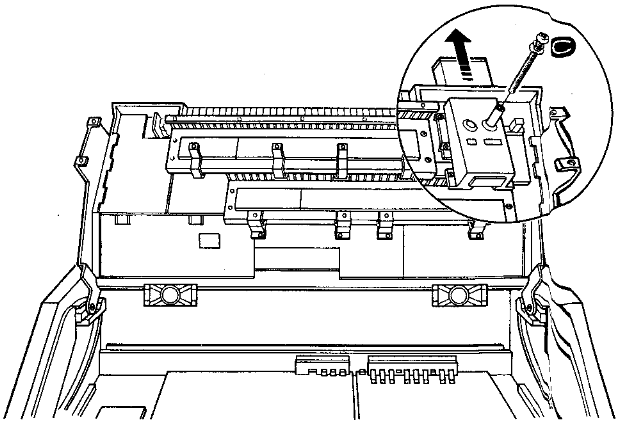
1. Remove both top cover and sliding cover. (See steps 1 and 2.)
2. Remove the control panel holding screws located under the upper cabinet. (Ⓑ 9 pcs.)
3. The control panel with keyboard unit can now opened upwards.



[Fig. 7]

4 Digital Disk Recorder (DDR)

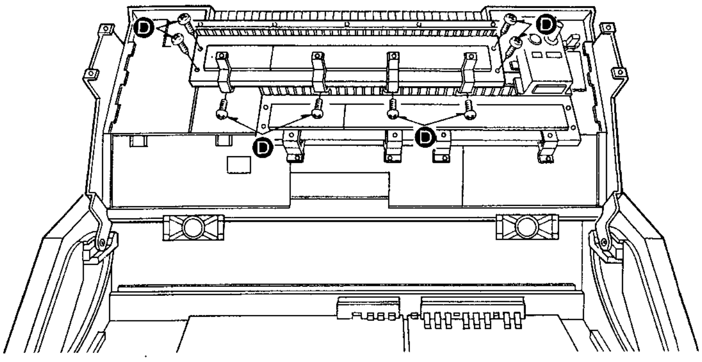
1. Open the control panel with keyboard unit. (See step 3.)
2. Remove the DDR holding screw. (Ⓒ 1 pcs.)
3. Pushing the DDR from the window of the chassis.
4. Then the DDR can be removed.



[Fig. 8]

5 Lower Keyboard Ass'y

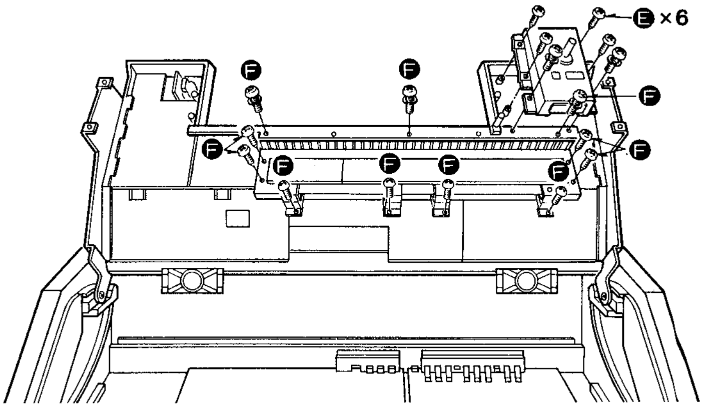
1. Open the control panel with keyboard unit. (See step 3.)
2. Remove the connectors from the keyboard P.C.B.
3. Remove the lower keyboard ass'y holding screws. (Ⓓ 8 pcs.)
4. The lower keyboard ass'y can be removed.



[Fig. 9]

6 Upper Keyboard Ass'y

1. Open the control panel with keyboard unit. (See step 3.)
2. Remove the digital disk recorder and lower keyboard ass'y. (See step 4 and 5.)
3. Remove the connectors from the keyboard P.C.B. and FD connector P.C.B.
4. Remove the digital disk recorder mounting chassis. (Ⓔ 6 pcs.)
5. Remove the upper keyboard ass'y holding screws. (Ⓕ 11 pcs.)
6. The upper keyboard ass'y can be removed.



[Fig. 10]

7 Key (s)

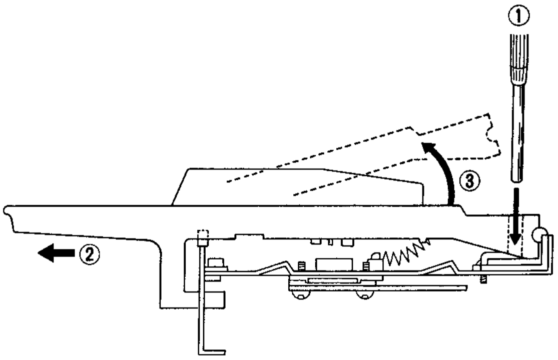
Disassembly:

1. Remove the keyboard ass'y from the cabinet. (See steps 5 & 6.)
2. Use 1/8 inch Phillips screw driver and insert it to the hole at end of the key for release the key as shown in Fig. 11.
3. Pull the key to the toward.

Note:
If a black key is to be replaced it is necessary to remove both adjacent white keys fast.

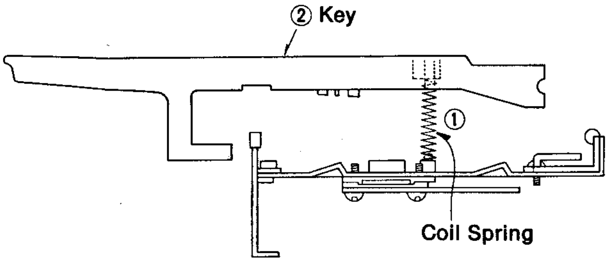
Assembly:

1. Place the coil spring on to the chassis as shown Fig. 12.
2. Place the key into position as shown Fig. 12.
3. The front part of the key suppose to place into the position first, then place the end of the key in to the position as shown Fig. 13.

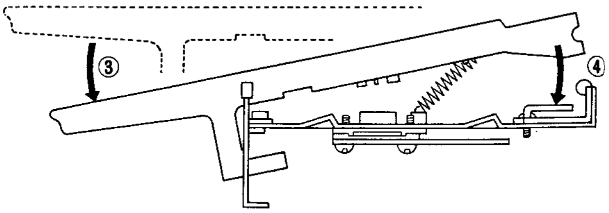


[Fig. 11]

Note:
If the black key and white key are removed, start to mount the black key first.



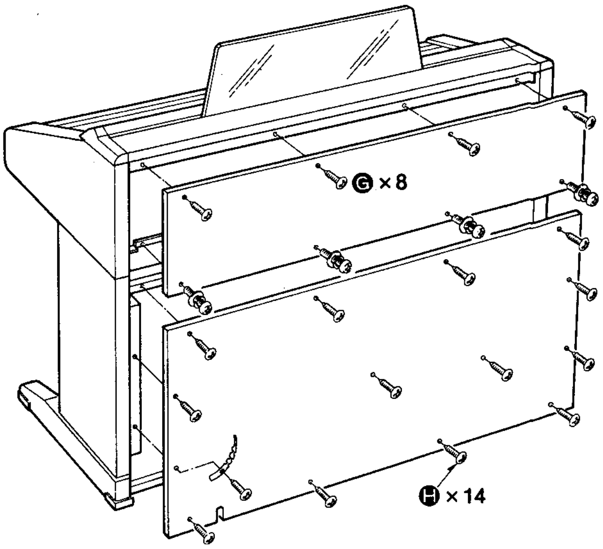
[Fig. 12]



[Fig. 13]

8 Rear Board

1. Upper rear board
   Remove the upper rear board holding screws. (Ⓖ 8 pcs.)
2. Lower rear board
   Remove the lower rear board holding screws. (Ⓗ 14 pcs.)



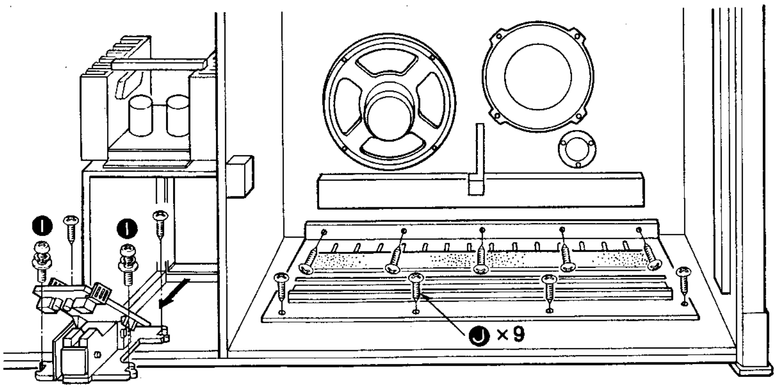
[Fig. 14]

9 Expression Pedal Ass'y

1. Remove the lower rear board of the cabinet. (See step 8.)
2. Remove the expression pedal mounting screws. (Ⓘ 4 pcs.)
3. The expression pedal can be removed.

10 Pedal Keyboard Ass'y

1. Remove the lower rear board of the cabinet. (See step 8.)
2. Remove the pedal keyboard holding screws. (Ⓙ 9 pcs.)
3. Tilt the entire unit a little to toward to the rear very carefully for easier to take the pedal keyboard out from the bottom wood board.



[Fig. 15]

MEASUREMENTS AND ADJUSTMENTS

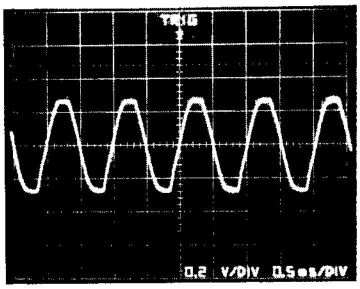
■ Measuring Equipment

- Oscilloscope 20MHz, 10: 1 probe
- Capacitor, 50V 1µF (ECEA1HN010S)
- Oscillator, 1kHz sine wave, 0~10Vp-p, 600Ω

ADJUSTMENT	MEASURING CONDITIONS	EQUIPMENT	ADJUSTMENT P.C.B.	ADJ. POINT	CONNECT METER TO	METER READING
BBD Bias (TREMOLO)	any position	Oscilloscope and oscillator	EJ P.C.B.	VR1	IC22-① pin	Photo-A
	1. Connect the oscilloscope to IC22-① pin of EJ circuit board. 2. Input 1kHz sine wave to IC20-③ pin by oscillator through capacitor of less than 50V 1µF. Then, adjust the output level of oscillator until the sinewave on the oscilloscope is clipped. 3. Adjust VR1 so that the output waveforms on the oscilloscope are evenly clipped at top and bottom.					
BBD Bias (EFFECT 1)	any position	Oscilloscope and oscillator	EJ P.C.B.	VR2	IC26-⑦ pin	Photo-A
	1. Connect the oscilloscope to IC26-⑦ pin of EJ circuit board. 2. Input 1kHz sine wave to IC39-③ pin by oscillator through capacitor of less than 50V 1µF. Then, adjust the output level of oscillator until the sinewave on the oscilloscope is clipped. 3. Adjust VR2 so that the output waveforms on the oscilloscope are evenly clipped at top and bottom.					

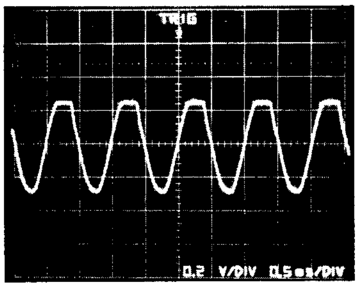
BBD bias adjustment

○: Good



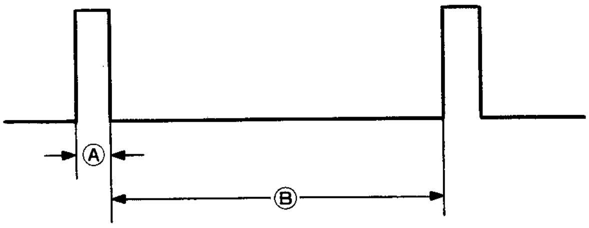
[Photo-A]

×: Fault



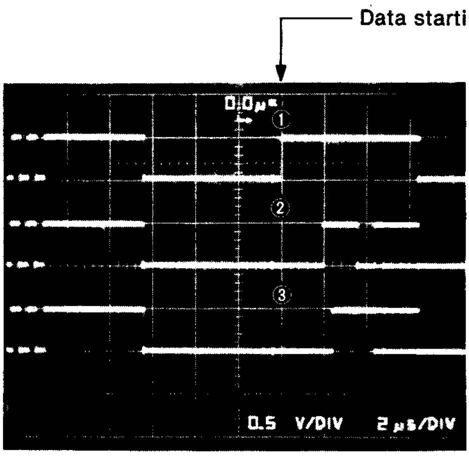
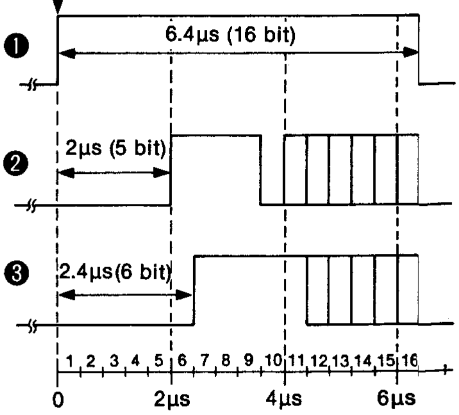
[Photo-B]

ADJUSTMENT	MEASURING CONDITIONS	EQUIPMENT	ADJUSTMENT P.C.B.	ADJ. POINT	CONNECT METER TO	METER READING
EXP. Control pulse width	Main volume.................max. Expression pedal.........max. any key..........................on	Oscilloscope	EXPC P.C.B.	VR1	IC1-④ pin	Fig. A
	1. Connect the oscilloscope to IC1-④ pin of EXPC circuit board. 2. Adjust the VR1 so that the pulse width Ⓐ and Ⓑ ratio, as shown in Fig. A.					



Ⓐ:Ⓑ=1:9

[Fig. A]

ADJUSTMENT	MEASURING CONDITIONS	EQUIPMENT	ADJUSTMENT P.C.B.	ADJ. POINT	CONNECT METER TO	METER READING
AFTER TOUCH SENSOR Sensitivity	any position	Oscilloscope	MKB1 P.C.B.	VR1	IC3-① pin	6.0V
	1. Press one of the any keys hardly and check the IC3-① pin voltage. The voltage will increase and became steady. 2. Adjust the voltage to 6.0V with VR1 at that time.					
DRV bias	any position	Oscilloscope	DRV P.C.B.	VR1	Check Point ⓬, ⓭	Photo-C Fig. B
	1. Connect the oscilloscope channel 1 to DRV circuit check point ⓬ and connect the oscilloscope external trigger in to DRV check point ⓭. (oscilloscope Diviation setting must be=0.5V/DIV, 2µs/DIV) 2. Turn the adjustment VR1 to full clockwise. 3. Turn the VR1 counter-clockwise gradually to find the data starting point turns to HIGH (refer photo C-❶, & Fig. B-❶) and adjust the strating point to the oscilloscope diviation line for easy counting for next procedure. 4. Confirm the first 5 bits (2.0µs) are low when turn the VR1 to full counter-clockwise. (refer photo C-❷, Fig. B-❷) 5. Turn the VR1 clockwise gradually and make first 6 bits (2.4µs) turn to low. (refer photo C-❸, Fig. B-❸)  Data starting point 0.0µs ① ② ③ 0.5 V/DIV 2 µs/DIV **[Photo-C]**  ❶ 6.4µs (16 bit) ❷ 2µs (5 bit) ❸ 2.4µs(6 bit) 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 0 2µs 4µs 6µs **[Fig. B]**					

PRECAUTIONS BEFORE SERVICING

■ Precautions for measuring of the output waveforms.

1. Set to the INITIAL mode before measurement. (Refer to page I-3.)
2. After INITIAL mode, set the measurement conditions as each check points.
3. The waveform was measured by "National Digital Storage Oscilloscope VP-5730A". Therefore the waveforms of musical tone signals shown may somewhat change due to variation of timing of triggering.
4. Since the 1/10 of the test probe is used, the indicated voltage value on bottom part of the each waveform photo is 1/10 of the actual value. (e.g. 0.2V/cm should be 2.0V/cm)

■ Important safety notice:

Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

■ Symbolic Marks

The symbolic marks for resistors and capacitors which used in this circuits are classified as following TABLE-1 and TABLE-2.

1. RESISTORS
   - Resistors without symbolic mark are FIXED CARBON FILM RESISTORS (ERD-type).
   - All resistors are 1/4WATT, ±5% TOLERANCE unless otherwise designated in the schematic diagrams.

(TABLE-1)

SYMBOL	SPECIFICATION	SYMBOL	SPECIFICATION
Ⓕ	Fixed Carbon Film Resistors "FLAME-PROOF" (ERD—F—type)	Ⓕ	Fixed Metal Film Resistors "FLAME-PROOF" (ERX—type)
Ⓕ	Fixed Wire Wound Resistors "FLAME-PROOF" (ERF—type)	🄵	Fuse Type Fixed Metal Oxide Film Resistors "FLAME-PROOF" (ERQ—type)
Ⓕ	Fixed Metal Oxide Film Resistors "FLAME-PROOF" (ERG—type)	🄵	Fuse Type Fixed Carbon Film Resistors "FLAME-PROOF" (ERD2FC—type)
Ⓖ	Fixed Metal Film Resistors (Precision and High Stability) (ERO—type)		

2. CAPACITORS
   - Capacitors without symbolic mark are POLYESTER CAPACITORS. (ECQM-type, ECQG-type, ±10% Tolerance)
   - Polarized capacitors without symbolic mark are Aluminum Electrolytic Capacitors. (ECEA—type, ±20% Tolerance)

(TABLE-2)

SYMBOL	SPECIFICATION	TYPE
Ⓝ	Non-Polarised Electrolytic Capacitors	ECEA−KN−type
Ⓨ	Non-Polarised Electrolytic Capacitors (for Network System)	ECEA−Y−type
(MS)	Aluminum Electrolytic Capacitors (Low leakage current type)	ECEA−M−type
Ⓩ	Aluminum Electrolytic Capacitors (Low impeadance type)	ECEA−Z−type
(TF)	Metalized Plastic Film Capacitors (TF Series)	ECQV−type
	Polyester Film Capacitors	ECQB−type
○	Temprature Compensating Ceramic Capacitors	ECC−type
	High-Dielectric Constant Ceramic Capacitors	ECK−type ECR−type
	Metalized Polyester Film Capacitors for Across the Line	ECQ−EW−type
	Aluminum Electrolytic Capacitors for smooting Circuit	ECES−type
Ⓣ	Tantalum Solid Electrolytic Capacitors	ECS−type

SYMPTOMS WHICH APPEAR TO BE SIGNS OF TROUBLE

The following changes in performance may occur in the Technics organ but do not indicate trouble:

Phenomenon	Remedy

■ SOUNDS and EFFECTS

The buttons, keys, etc. malfunction.	•Turn off the **PLAY** button once, then turn it on again. •If the above procedure is not successful, turn off the **PLAY** button once. Then, while pressing **16 BEAT 1**, **16 BEAT 2** and **16 BEAT BALLAD** in the **RHYTHM** section at the same time, turn the **PLAY** button on again. (Note that, in this case, the stored contents of the **SEQUENCER**, **COMPOSER**, etc. are erased.)
When a key is pressed, it does not sound.	The buttons and keys do not function when the **DEMO** ♪ button is on. Press the **DEMO** ♪ button to turn it off.
The sound of a part cannot be heard.	•The corresponding volume is set to off in the **ORCHESTRAL CONDUCTOR**. Use the ▲▼ buttons below the display to adjust the volume for that part to an appropriate level. •The LOCAL CONTROL for the part is set to OFF. Set the LOCAL CONTROL to ON.
When the **TAB & ORGAN** is selected in the **ORCHESTRAL CONDUCTOR**, it does not sound.	If all the **FLUTE** and **PERC** buttons are off while the **TAB & ORGAN** button is on, it does not sound. Turn on the **FLUTE** or **PERC** button to select the sound.
When many keys are pressed at the same time, some sounds cannot be heard.	•The DUAL mode is selected. •MONO or SOLO mode is selected with the PART ASSIGN function.
The sound of the lower keyboard or pedal keyboard does not stop.	This occurs if the lower keyboard is played when the **FINGERED 1** or **2** and the **MEMORY** buttons are on. Turn off the **MEMORY** button.
The knee lever, foot switch(es) and full bass pedal do not operate properly. For example, the knee lever does not turn the **SUSTAIN** function on and off.	Any functional on and off operation other than the factory presets are storable in these switches. For example, the knee lever can turn the **TECHNI-CHORD** on and off. Store your favorite functions to turn them on and off.

■ RHYTHM

The rhythm does not start.	•The **DRUMS** button in the **VOLUME** section is turned off. •A **COMPOSER** number button in which no data is stored has been selected. •When a **SEQUENCER** track button(s) is on, the rhythm will not start unless the rhythm part has been stored. •When the clock mode is set to MIDI, the rhythm does not start if no MIDI clock signal is received from another instrument. When using only the organ, return the clock mode to the internal clock, for example by turning off the **PLAY** button once.

■ AUTO PLAY CHORD

The **ACCOMP 1**, **2** or **3** part does not sound when the automatic accompaniment is used.	•When both the **ACCOMP 1** and **2&3** buttons of the **ARRANGER** are off, the **ACCOMP** part of the **AUTO PLAY CHORD** or **COMPOSER** function does not sound. Turn on the desired **ACCOMP 1** or **2&3** button. •When the lower keyboard is played with the **KEYBOARD PERCUSSION**, **ACCOMP** and **BASS** automatic accompaniment patterns do not sound. Play the chord on the lower keyboard after pressing the **KEYBOARD PERCUSSION** button to turn it off.

Phenomenon	Remedy

■ SOUND EDIT

When a chord is played on the keyboard, each key sounds different.	DUET or TRIO mode sound is composed of multiple tones. When a chord is played, different tones are assigned to each key.

■ COMPOSER

Storage is not possible.	•The remaining storage capacity of the **COMPOSER** memory is 0. Erase any **COMPOSER** memory number in which a pattern is stored. Save it in a memory disk (SY-D20), if necessary. •In the real-time recording mode, press the **START/STOP** button when the display is **PAGE 3**, and recording will start.
The setting of the time signature or the number of measures is not possible.	The time signature or the number of measures cannot be changed when a pattern is stored in the **COMPOSER**. Erase the stored pattern.
The stored rhythm pattern plays back at intervals.	This occurs when the number of stored measures is less than the specified number. Store a pattern of the same number of measures which is specified on the **PAGE 2** display.
The timing of a rhythm pattern which was stored in the real-time mode is not correct.	The smallest note unit that can be stored is defined by setting the QUANTIZE level. When the timing of a played note is off for the QUANTIZE level, it will be corrected to the nearest note unit and stored.

■ SEQUENCER

Storage is not possible.	•The indicator for the track to be used is not flashing. •The remaining storage capacity of the **SEQUENCER** memory is 0. Erase other memory contents with the TRACK CLEAR or SONG CLEAR function. (If desired, first save them in a memory disk [SY-D20].)
Multi-track recording does not work.	When the indicator for the playback track is lit, press the **START/STOP** button to start recording.
The displayed measure number during recording or playback does not coincide with the performance.	The number of measures corresponds to the time signature of the rhythm which was selected at the beginning of recording or playback. If the time signature is modified by changing the rhythm, store the rhythm change data in the **RHYTHM** track.
The automatic rhythm does not start when playback has been started during the performance.	When automatic playback is begun at a point after the stored rhythm start, the rhythm will not start.

■ DIGITAL DISK RECORDER

The Digital Disk Recorder produces a noise during storage or automatic performance.	This occurs when the Digital Disk Recorder searches for a storage location. It does not indicate a problem.
When the operation to load from the memory disk is performed, the contents of the organ's internal memory are erased.	When performing the load operation from a memory disk, the organ's internal memory changes to that stored in the memory disk. To preserve a song in the organ's memory, save it in a memory disk before performing the load procedure.

ERROR DISPLAY

Display	Cause
■ **COMPOSER/SEQUENCER**	
MEMORY full!!	• The **COMPOSER** or **SEQUENCER** memory is full.
MEASURE error!!	• A measure number which does not exist was specified. • The measure number was specified improperly.
REPEAT exists	• You attempted to use the copy, insert or delete procedure for a **SEQUENCER** chord track or rhythm track in which a repeat mark is stored.
PART error!!	• Illegal edit attempt, such as in a melody track or rhythm track.
DATA exists	• You attempted to use the **COMPOSER** function to modify a beat or measure of memory where a pattern was stored.
TRACK error!!	• You attempted to edit a **SEQUENCER** track in which no song or data is stored.
OPERATION error!!	• Recording is ending with no punch out point specified (the punch in point was specified).
■ **MEMORY DISK**	
LOAD error!!	• Loading failed.
SAVE error!!	• Saving failed.
DELETE error!!	• Deleting a song failed.
VERIFY error!!	• Data verification failed. • Loaded, saved, or copied data has errors.
FORMAT error!!	• Formatting failed.
NO DISK	• A memory disk is not inserted.
PROTECT error!!	• You attempted to save to a memory disk which is write protected.
SONG NOT FOUND	• You attempted to load a song which does not exist in the memory disk.
DISK FULL!!	• Available memory area on the memory disk is full. Erase some stored tunes on the memory disk or use a new memory disk.

MIDI INPLEMENTATION CHART

Organ

[SX-GN3(K)/SX-GN5(K)/SX-GN7(K)/SX-GN9(K)] **(Transmitted)**

Function		UPPER POLY	UPPER SPECIAL SOLO (GN3/GN5)/ EXTRA (GN7/GN9)	LOWER POLY	LOWER SPECIAL SOLO (GN3/GN5)/ EXTRA (GN7/GN9)	ACCOMP 1~3	BASS	DRUMS	CONTROL	Remarks
Basic Channel	Default	1~16	1~16	1~16	1~16	1~16	1~16	1~16	1~16	memorized
	Changed	1~16	1~16	1~16	1~16	1~16	1~16	1~16	1~16	
Mode	Default	3	3	3	3	3	3	3	3	OMNI OFF POLY MODE
	Messages	×	×	×	×	×	×	×	×	
	Altered	—	—	—	—	—	—	—	—	
Note Number		0~127	0~127	0~127	0~127	0~127	0~127	0~127	—	Changes depending on the position of the Octave Shift or Transpose control.
	True voice	—	—	—	—	—	—	—	—	
Velocity	Note ON	○	○	○	○	○	○	○	—	
	Note OFF	× (9nH:v=0)	× (9nH:v=0)	× (9nH:v=0)	× (9nH:v=0)	× (9nH:v=0)	× (9nH:v=0)	× (9nH:v=0)	—	
After Touch	Key's	×	×	×	×	×	×	×	×	
	Ch's	× *○× (GN9)	× *○× (GN9)	× *○× (GN9)	× *○× (GN9)	×	×	×	×	
Pitch Bender		× *○× (GN9)	× *○× (GN9)	× *○× (GN9)	× *○× (GN9)	× *○× (GN9)	× *○× (GN9)	×	×	
Control Change	1	*○×	*○×	*○×	*○×	*○×	*○×	×	×	modulation (GN9)
	7	*○×	*○×	*○×	*○×	*○×	*○×	*○×	*○×	volume main volume
	11	×	×	×	×	×	×	×	*○×	expression pedal
	64	*○×	*○×	*○×	*○×	*○×	*○×	×	×	sustain
	80	×	×	*○×	×	×	×	×	×	auto play chord
	82	×	×	×	×	×	×	*○×	×	intro, fill in, ending
	92	*○×	×	*○×	×	×	×	×	×	tremolo
	93	*○×	*○×	*○×	*○×	*○×	*○×	×	×	chorus (effect 2) (GN9)
	94	*○×	*○×	*○×	*○×	*○×	× (GN3/GN5) *○× (GN7/GN9)	×	×	celeste (effect 1)
Prog Change		*○×	*○×	*○×	*○×	*○×	*○×	*○×	× (GN3/GN5) *○× (GN7/GN9)	
	True #	—	—	—	—	—	—	—	—	
System exclusive		×								
System Common	Song Pos	*○×								
	Song Sel	*○×								0~19
	Tune	×								
System Real Time	Clock	○								
	Commands	*○×								start/stop/continue
Aux Messages	Local ON/OFF	×	×	×	×	×	×	×	—	
	All notes OFF	○	○	○	○	○	○	○	—	
	Active Sense	○								
	Reset	×								
Notes		*○×............Whether or not the data for each of these items is transmitted can be set.								

Mode 1: OMNI ON, POLY **Mode 2:** OMNI ON, MONO ○: Yes
Mode 3: OMNI OFF, POLY **Mode 4:** OMNI OFF, MONO ×: No

Organ

[SX-GN3(K)/SX-GN5(K)/SX-GN7(K)/SX-GN9(K)]

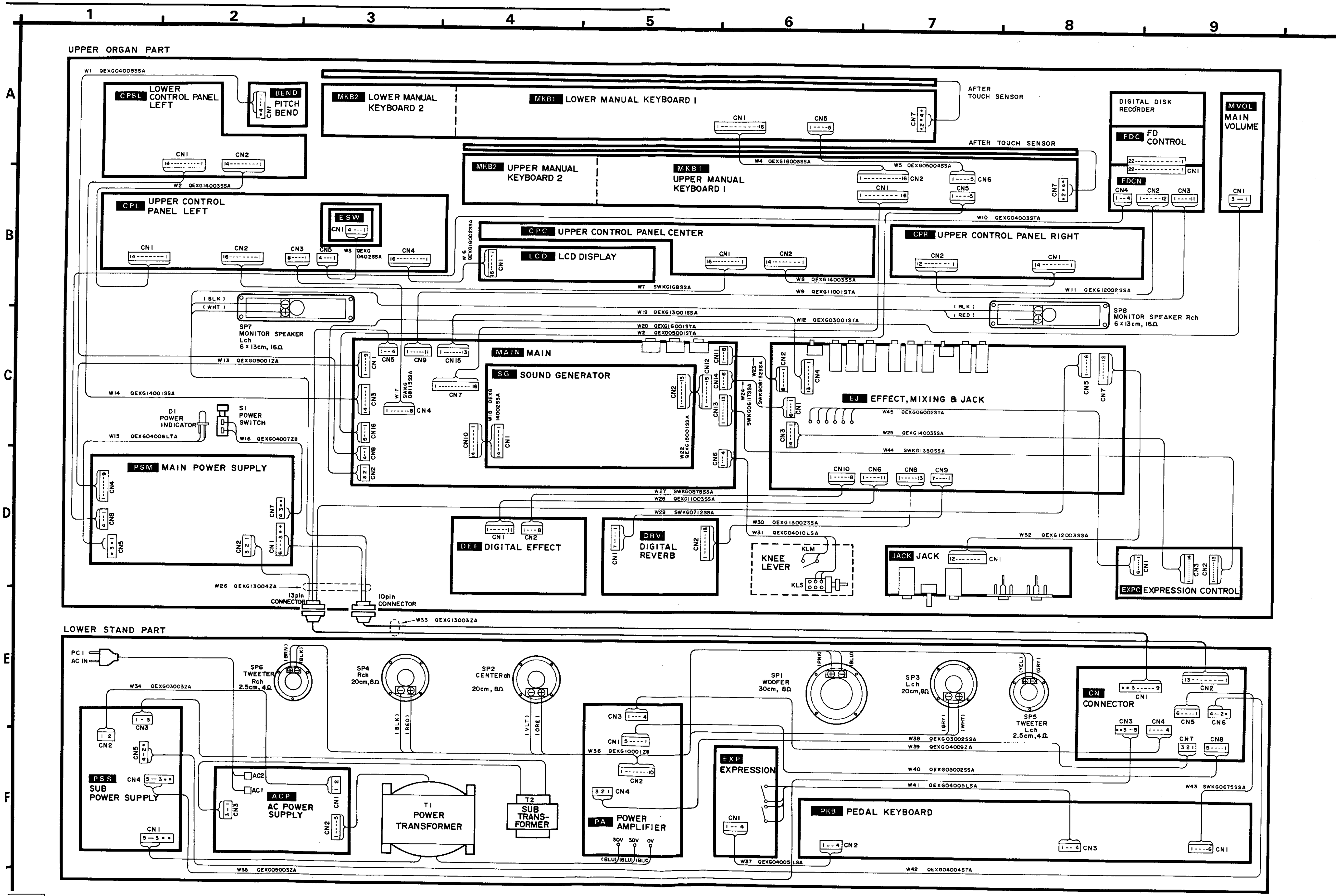
(Recognized)

Function		UPPER POLY	UPPER SPECIAL SOLO (GN3/GN5)/ EXTRA (GN7/GN9)	LOWER POLY	LOWER SPECIAL SOLO (GN3/GN5)/ EXTRA (GN7/GN9)	ACCOMP 1~3	BASS	DRUMS	CONTROL	Remarks
Basic Channel	Default Changed	1~16 1~16	1~16 1~16	1~16 1~16	1~16 1~16	1~16 1~16	1~16 1~16	1~16 1~16	1~16 1~16	memorized
Mode	Default Messages Altered	3 × —	3 × —	3 × —	3 × —	3 × —	3 × —	3 × —	3 × —	OMNI OFF POLY MODE
Note Number	True voice	0~127 24~119	0~127 24~119	0~127 24~119	0~127 24~119	0~127 24~119	0~127 24~95	0~127 36~74 (GN3/GN5) 36~83 (GN7/GN9)	— —	Changes depending on the position of the Octave Shift or Transpose control.
Velocity	Note ON Note OFF	○ ×	○ ×	○ ×	○ ×	○ ×	○ ×	○ ×	— —	
After Touch	Key's Ch's	× × *○× (GN9)	× × *○× (GN9)	× × *○× (GN9)	× × *○× (GN9)	× ×	× ×	× ×	× ×	
Pitch Bender		*○×	*○×	*○×	*○×	*○×	*○×	×	×	
Control Change	1	*○×	*○×	*○×	*○×	*○×	*○×	×	×	modulation
	7	*○×	*○×	*○×	*○×	*○×	*○×	*○×	*○×	volume main volume
	11	×	×	×	×	×	×	×	*○×	expression pedal
	64	*○×	*○×	*○×	*○×	*○×	*○×	×	×	sustain
	80	×	×	*○×	×	×	×	×	×	auto play chord
	82	×	×	×	×	×	×	*○×	×	intro, fill in, ending
	92	*○×	×	*○×	×	×	×	×	×	tremolo
	93	*○×	*○×	*○×	*○×	*○×	*○×	×	×	chorus (effect 2) (GN9)
	94	*○×	*○×	*○×	*○×	*○×	× (GN3/GN5) *○× (GN7/GN9)	×	×	celeste (effect 1)
Prog Change	True #	*○× 0~23/0~7** 0~29/0~7** 0~35/0~15**	*○× 0~23 0~29 0~35	*○× 0~23 0~29 0~35	*○× 0~23 0~29 0~35	*○× 0~15 0~19 0~23	*○× 0~15 0~23 0~23	*○× 0~39 0~39 0~39	× (GN3/GN5) *○× (GN7/GN9) — 0~8 0~8	(GN3/GN5) (GN7) (GN9)
System exclusive		×								
System Common	Song Pos Song Sel Tune	*○× *○× ×								 0~19
System Real Time	Clock Commands	○ *○×								start/stop/continue
Aux Messages	Local ON/OFF All notes OFF	× ○	× ○	× ○	× ○	× ○	× ○	× ○	— —	
	Active Sense Reset	○ ×								
Notes		*○×............Whether or not the data for each of these items is received can be set. ** VSC Program Change								

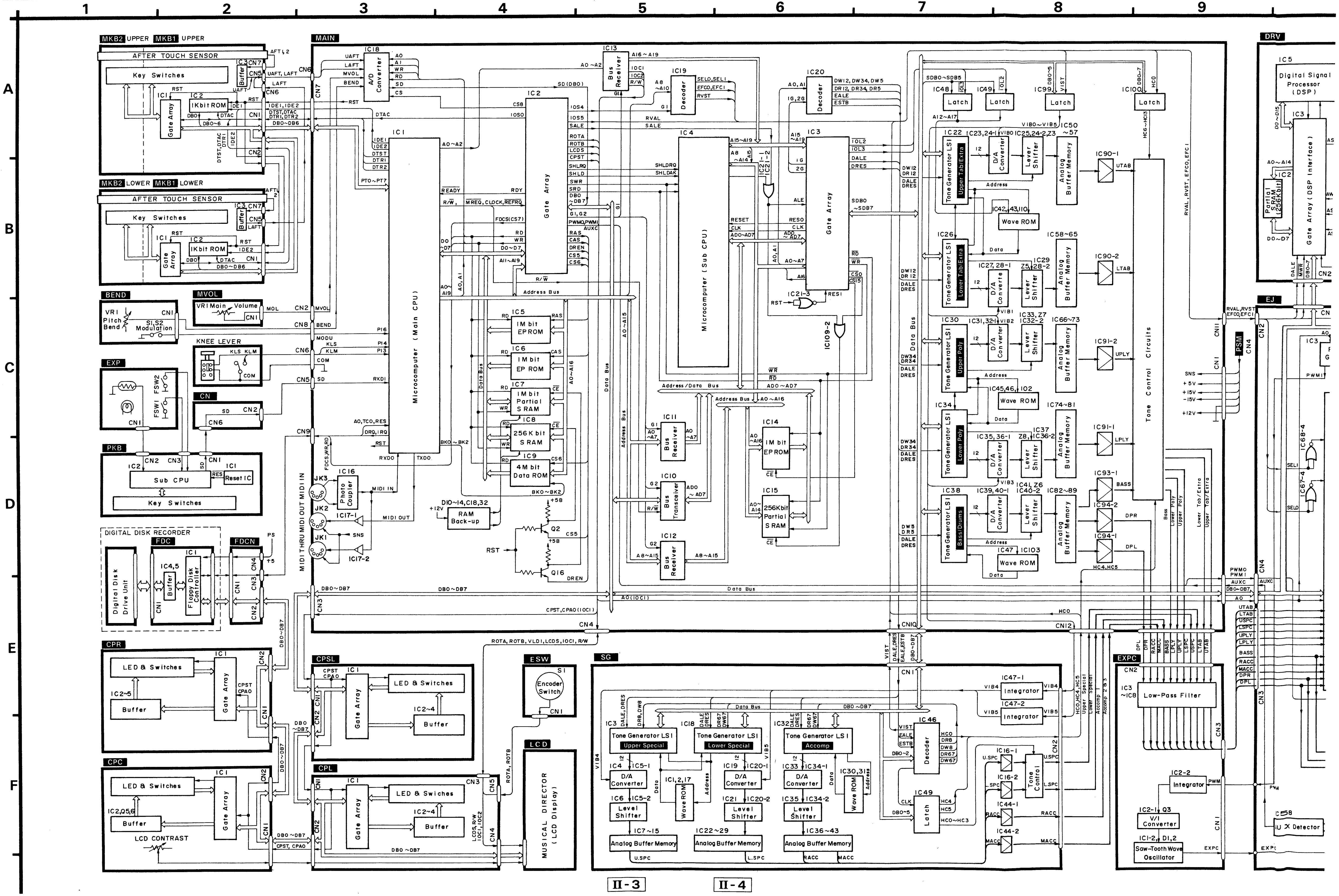
Mode 1: OMNI ON, POLY **Mode 2:** OMNI ON, MONO ○: Yes
Mode 3: OMNI OFF, POLY **Mode 4:** OMNI OFF, MONO ×: No

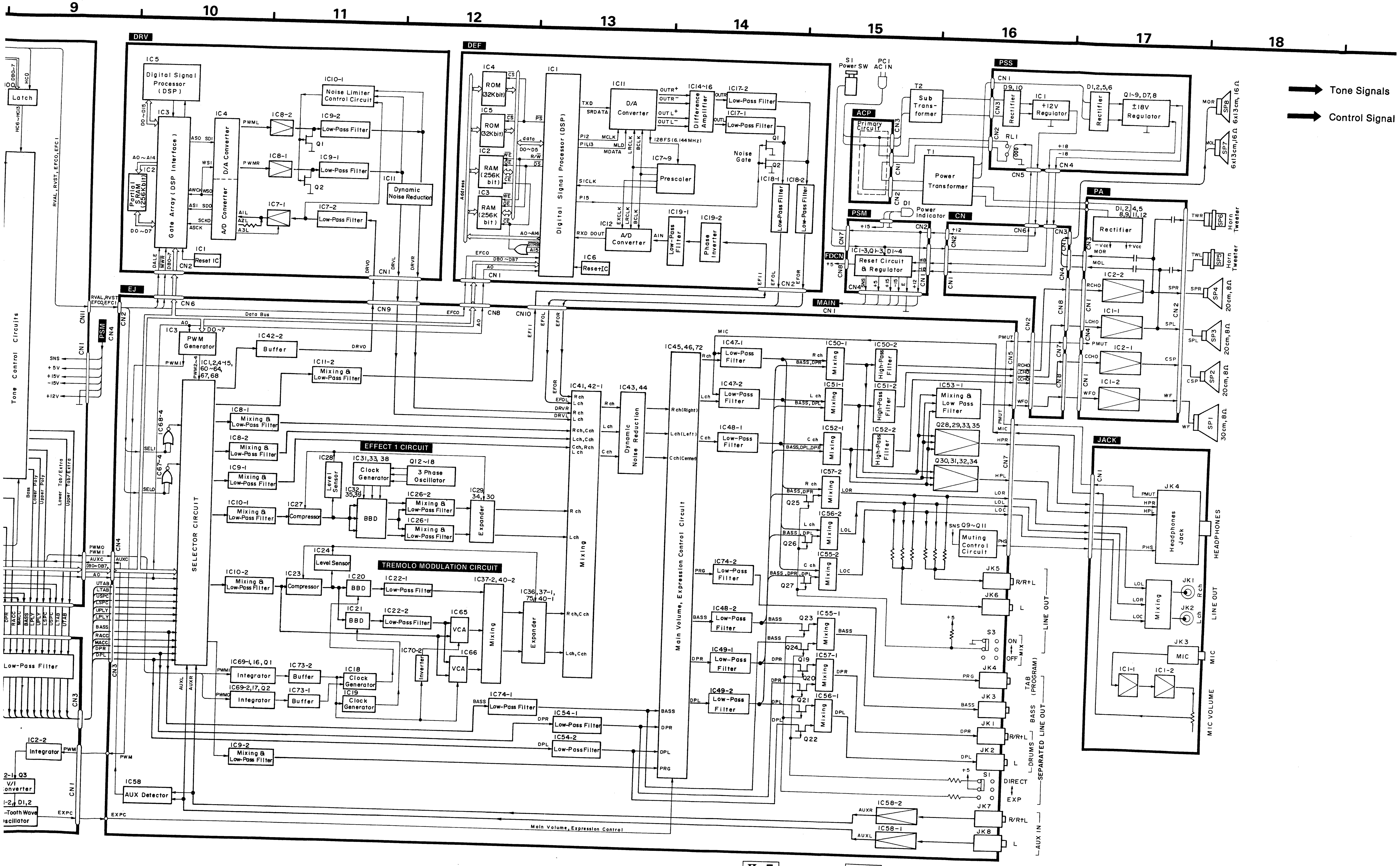
MEMO

WIRING CONNECTION DIAGRAM


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
UPPER ORGAN PART
W1 QEXG04008SSA
CPSL LOWER CONTROL PANEL LEFT
CN1
CN2
W2 QEXG14003SSA
BEND PITCH BEND
MKB2 LOWER MANUAL KEYBOARD 2
MKB1 LOWER MANUAL KEYBOARD 1
CN5
CN7
AFTER TOUCH SENSOR
W4 QEXG16003SSA
W5 QEXG05004SSA
MKB2 UPPER MANUAL KEYBOARD 2
MKB1 UPPER MANUAL KEYBOARD 1
CN6
DIGITAL DISK RECORDER
FDC FD CONTROL
FDCN
CN4
CN3
MVOL MAIN VOLUME
CPL UPPER CONTROL PANEL LEFT
ESW
W3 QEXG 04025SA
W6 QEXG16002SSA
CPC UPPER CONTROL PANEL CENTER
LCD LCD DISPLAY
W7 SWKG168SSA
W8 QEXG14003SSA
W9 QEXG11001STA
W10 QEXG04003STA
CPR UPPER CONTROL PANEL RIGHT
W11 QEXG12002SSA
(BLK)
(WHT)
SP7 MONITOR SPEAKER Lch 6×13cm, 16Ω
(RED)
SP8 MONITOR SPEAKER Rch 6×13cm, 16Ω
W19 QEXG13001SSA
W12 QEXG03001STA
W20 QEXG16001STA
W21 QEXG05001STA
W13 QEXG09001ZA
W14 QEXG14001SSA
MAIN MAIN
CN9
CN15
SG SOUND GENERATOR
W17 SWKG 08133SA
W18 QEXG 14002SSA
CN10
CN16
CN8
CN12
CN14
CN13
W22 QEXG15001SSA
W23 SWKG08132SSA
W24 SWKG06117SSA
EJ EFFECT, MIXING & JACK
W45 QEXG06002STA
W25 QEXG14003SSA
W44 SWKG1350SSA
D1 POWER INDICATOR
S1 POWER SWITCH
W15 QEXG04006LTA
W16 QEXG04007ZB
PSM MAIN POWER SUPPLY
W27 SWKG0878SSA
W28 QEXG11003SSA
W29 SWKG0712SSA
W30 QEXG13002SSA
W31 QEXG04010LSA
W32 QEXG12003SSA
DEF DIGITAL EFFECT
DRV DIGITAL REVERB
KNEE LEVER
KLM
KLS
JACK JACK
EXPC EXPRESSION CONTROL
W26 QEXG13004ZA
13pin CONNECTOR
10pin CONNECTOR
W33 QEXG13003ZA
LOWER STAND PART
PC1 AC IN
SP6 TWEETER Rch 2.5cm, 4Ω
(BRN)
SP4 Rch 20cm, 8Ω
SP2 CENTER ch 20cm, 8Ω
SP1 WOOFER 30cm, 8Ω
(PNK)
(BLU)
SP3 Lch 20cm, 8Ω
(YEL)
(GRY)
SP5 TWEETER Lch 2.5cm, 4Ω
CN CONNECTOR
W34 QEXG03003ZA
PSS SUB POWER SUPPLY
AC2
AC1
ACP AC POWER SUPPLY
T1 POWER TRANSFORMER
T2 SUB TRANS-FORMER
(VLT)
(ORE)
PA POWER AMPLIFIER
W36 QEXG10001ZB
30V 30V 0V
(BLU) (BLU) (BLK)
EXP EXPRESSION
W37 QEXG04005LSA
W38 QEXG03002SSA
W39 QEXG04009ZA
W40 QEXG05002SSA
W41 QEXG04005LSA
W43 SWKG0675SSA
PKB PEDAL KEYBOARD
W35 QEXG05003ZA
W42 QEXG04004STA

BLOCK DIAGRAM


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
MKB2 UPPER MKB1 UPPER
AFTER TOUCH SENSOR
Key Switches
IC1 Gate Array
IC2 1Kbit ROM
IC3 Buffer
MKB2 LOWER MKB1 LOWER
BEND
VR1 Pitch Bend
S1,S2 Modulation
MVOL
VR1 Main Volume
KNEE LEVER
KLS KLM
EXP
FSW1 FSW2
CN
PKB
IC2 Sub CPU
IC1 Reset IC
Key Switches
DIGITAL DISK RECORDER
Digital Disk Drive Unit
FDC
IC4,5 Buffer
IC1 Floppy Disk Controller
FDCN
CPR
LED & Switches
IC1 Gate Array
IC2~5 Buffer
CPC
IC2,3,5,6 Buffer
LCD CONTRAST
MAIN
IC18 A/D Converter
IC1 Microcomputer (Main CPU)
IC2 Gate Array
IC5 1M bit EPROM
IC6 1M bit EP ROM
IC7 1M bit Partial S RAM
IC8 256K bit S RAM
IC9 4M bit Data ROM
IC16 Photo Coupler
IC17-1
IC17-2
JK1 JK2 JK3
MIDI THRU MIDI OUT MIDI IN
D10~14,C18,32
RAM Back-up
Q2
Q16
RST
IC13 Bus Receiver
IC19 Decoder
IC20 Decoder
IC4 Microcomputer (Sub CPU)
IC3 Gate Array
IC21-1 IC21-2 IC21-3
IC109-2
IC11 Bus Receiver
IC10 Bus Transceiver
IC12 Bus Receiver
IC14 1M bit EPROM
IC15 256Kbit Partial S RAM
Address Bus
Data Bus
Address/Data Bus
IC48 Latch
IC49 Latch
IC99 Latch
IC100 Latch
IC22 Tone Generator LSI Upper Tab/Extra
IC26 Tone Generator LSI Lower Tab/Extra
IC30 Tone Generator LSI Upper Poly
IC34 Tone Generator LSI Lower Poly
IC38 Tone Generator LSI Bass/Drums
D/A Converter
Level Shifter
Analog Buffer Memory
Wave ROM
IC42,43,110
IC45,46,102
IC47 IC103
IC90-1 IC90-2 IC91-2 IC91-1 IC93-1 IC94-2 IC94-1
UTAB LTAB UPLY LPLY BASS DPR DPL
Tone Control Circuits
DRV
IC5 Digital Signal Processor (DSP)
IC3 Gate Array (DSP Interface)
IC2 Partial SRAM (256Kbit)
EJ
PSM
CN4
ESW
Encoder Switch
CPSL
CPL
LED & Switches
IC1 Gate Array
IC2~4 Buffer
LCD
MUSICAL DIRECTOR (LCD Display)
SG
IC3 Tone Generator LSI Upper Special
IC18 Tone Generator LSI Lower Special
IC32 Tone Generator LSI Accomp
IC47-1 Integrator
IC47-2 Integrator
IC46 Decoder
IC49 Latch
IC16-1 IC16-2 IC44-1 IC44-2
Tone Control
IC4 IC5-1 D/A Converter
IC6 IC5-2 Level Shifter
IC7~15 Analog Buffer Memory
IC1,2,17 Wave ROM
IC19 IC20-1 D/A Converter
IC21 IC20-2 Level Shifter
IC22~29 Analog Buffer Memory
IC33 IC34-1 D/A Converter
IC35 IC34-2 Level Shifter
IC36~43 Analog Buffer Memory
IC30,31 Wave ROM
EXPC
IC3~IC8 Low-Pass Filter
IC2-2 Integrator
IC2-1, Q3 V/I Converter
IC1-2, D1,2 Saw-Tooth Wave Oscillator
IC58
IU X Detector

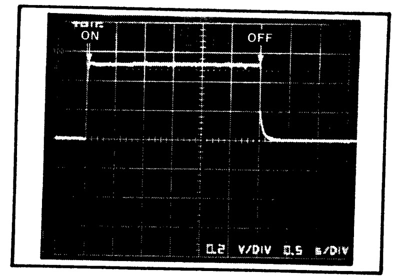

9
10
11
12
13
14
15
16
17
18
Tone Signals
Control Signal
DRV
DEF
EJ
PSS
ACP
PSM
CN
FDCN
MAIN
PA
JACK
Latch
Tone Control Circuits
Digital Signal Processor (DSP)
Gate Array (DSP Interface)
Partial SRAM (256Kbit)
D/A Converter
A/D Converter
Noise Limiter Control Circuit
Low-Pass Filter
Dynamic Noise Reduction
Reset IC
ROM (32Kbit)
RAM (256K bit)
Digital Signal Processor (DSP)
Prescaler
Difference Amplifier
Noise Gate
Phase Inverter
Reset+IC
S1 Power SW
PC1 AC IN
Sub Trans-former
Primary Circuit
Power Transformer
Power Indicator
Rectifier
+12V Regulator
±18V Regulator
Reset Circuit & Regulator
PWM Generator
Buffer
Mixing & Low-Pass Filter
SELECTOR CIRCUIT
EFFECT 1 CIRCUIT
Level Sensor
Clock Generator
3 Phase Oscillator
Compressor
BBD
Expander
Mixing
TREMOLO MODULATION CIRCUIT
VCA
Inverter
Integrator
AUX Detector
Dynamic Noise Reduction
Main Volume, Expression Control Circuit
Main Volume, Expression Control
High-Pass Filter
Mixing & Low Pass Filter
Muting Control Circuit
Headphones Jack
HEADPHONES
LINE OUT
MIC
MIC VOLUME
SP1 30cm, 8Ω
SP2 20cm, 8Ω
SP3 20cm, 8Ω
SP4 20cm, 8Ω
SP5 Horn Tweeter
SP6 Horn Tweeter
SP7 6×13cm, 16Ω
SP8 6×13cm, 16Ω
R/R+L
L
ON MIX OFF
TAB (PROGRAM)
BASS
DRUMS
SEPARATED LINE OUT
DIRECT
EXP
AUX IN
Low-Pass Filter
V/I Converter
Saw-Tooth Wave Oscillator

MAIN CIRCUIT BOARD

■ Measuring Conditions

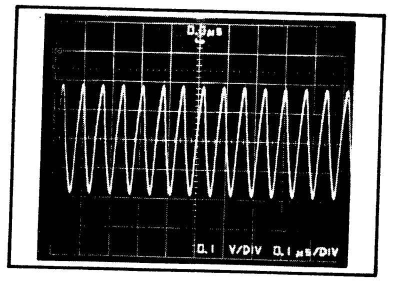
1. Set to the initial mode. (Refer to page I-3)
2. Set the all parts INITIAL TOUCH SENSE function (EFFECT MODE: Page 6) to "0". (Upper=0, Lower=0, Bass=0)
3. Change the unit setting as indicate below the pictures to confirm the waveforms.

❶ RESET

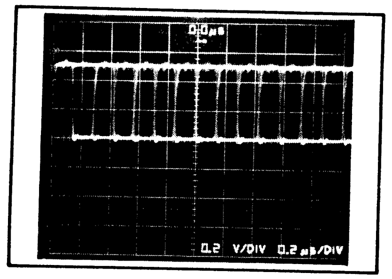


• Power SW..........................ON → OFF

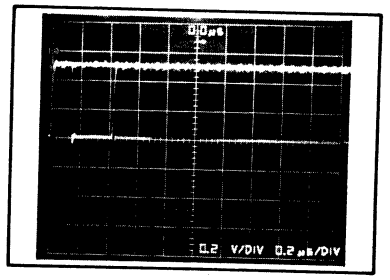
❷ X1, 14MHz



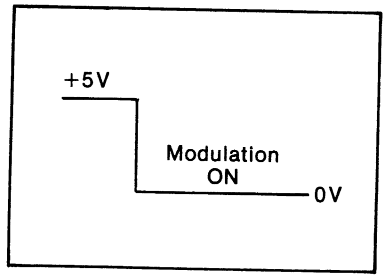
❸ RD



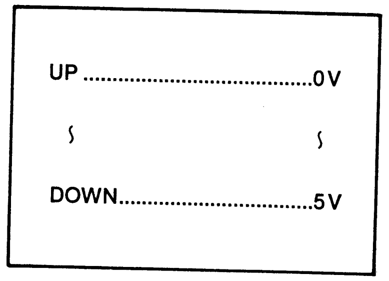
❹ WR



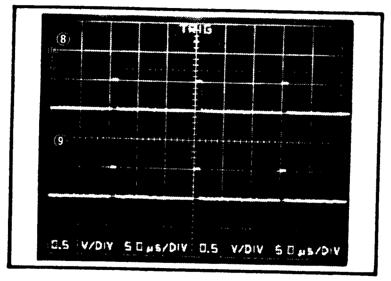
❻ MODU



❼ PITCH BEND

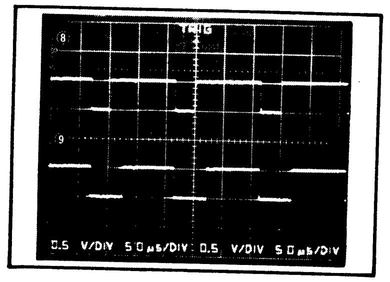

UP 0V
DOWN..................................5V

❽ PWM1, ❾ PWM0



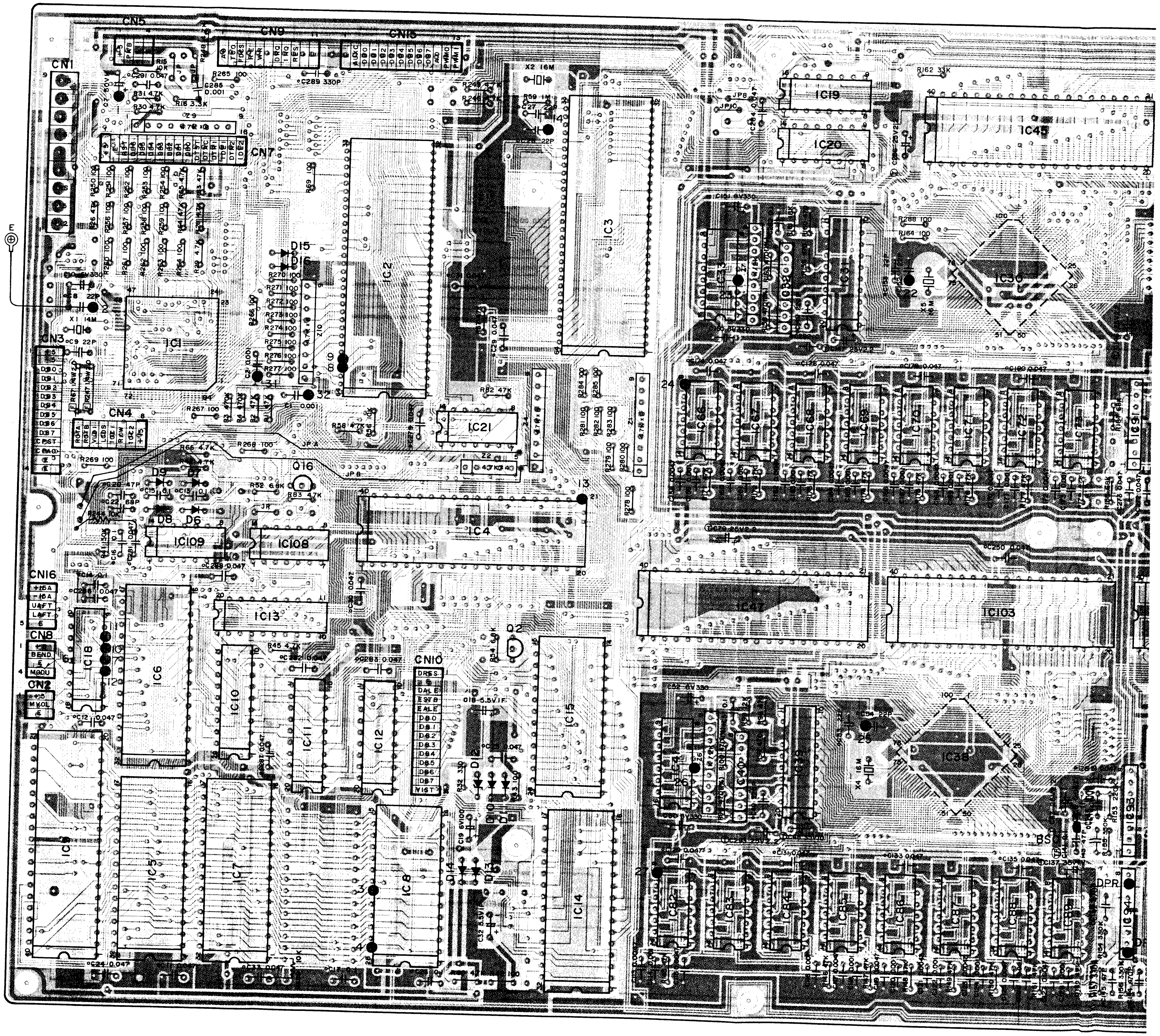
• Tremolo Slow/Fast............Slow

❽ PWM1, ❾ PWM0



• Tremolo Slow/Fast............Fast

Circuit view on top of P.C.B.


1
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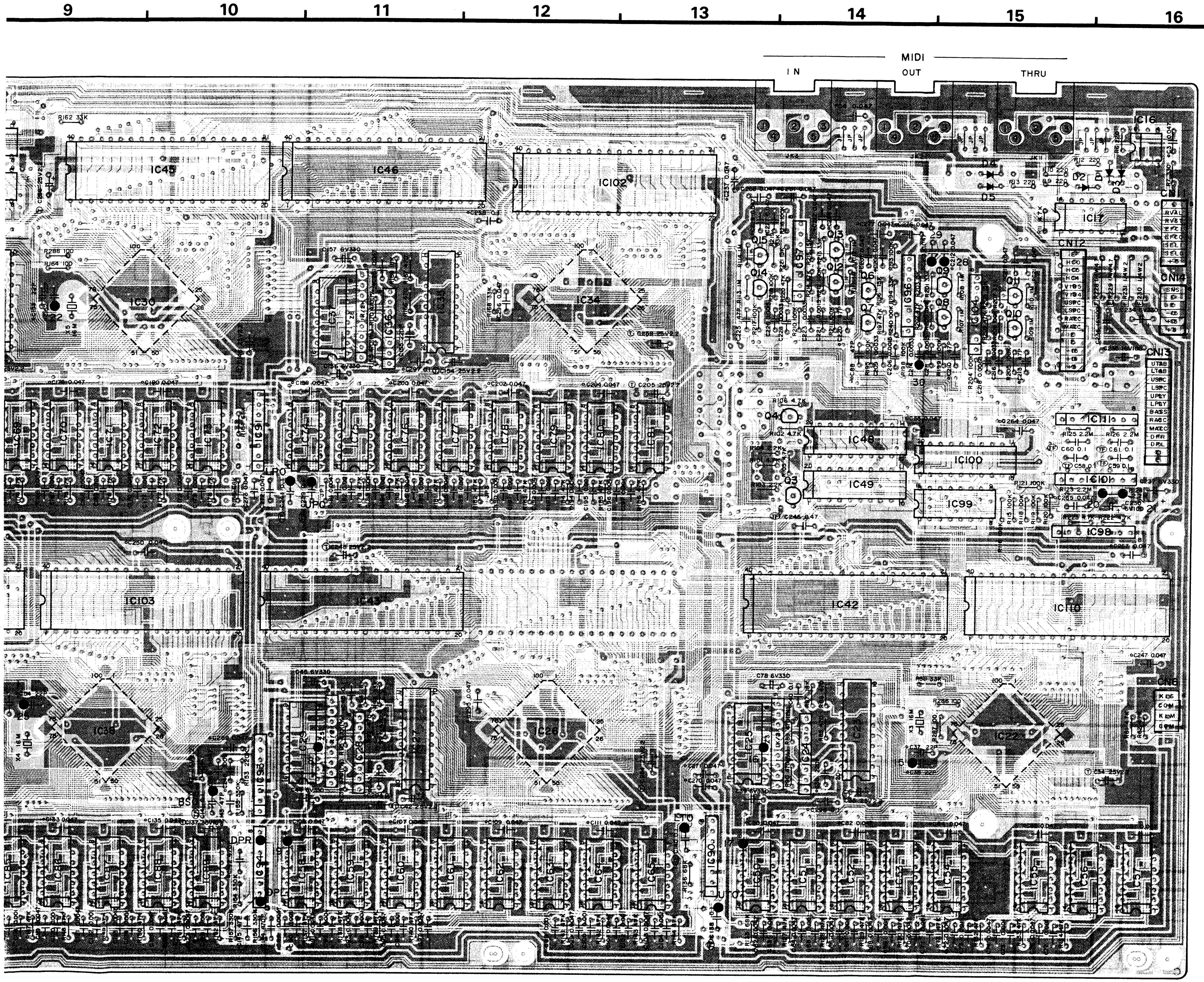
7
8
9
10
A
B
C
D
E
F
E
CN1
CN5
CN9
CN15
CN7
CN3
CN4
CN16
CN8
CN2
CN10
X1 14M
X2 16M
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
IC15
IC18
IC19
IC20
IC21
IC36
IC38
IC45
IC47
IC103
IC108
IC109
D15
D16
D8
D6
Q2
Q16


9
10
11
12
13
14
15
16
17
18
MIDI
IN
OUT
THRU
IC45
IC46
IC102
IC30
IC34
IC17
CN12
CN14
CN13
IC48
IC100
IC49
IC99
IC98
IC103
IC43
IC42
IC110
IC38
IC26
IC22
IC90

- [EZ] [MC] [XL] areas

SXPG200151

- Other areas

SXPG200111

NOTES:

- IC'S

IC1:	SVIGD70320GJ
IC2:	SVIGMB621407
IC3:	SVIGD656C329
IC4:	SVIGLH701088
IC5:	QSIGAGN9BX0
IC6:	QSIGAGN9AX0
IC7:	HM658128P12
IC8:	SVIGM5256BLL
IC9:	QSIGU3C04742
IC10:	M74HC245P
IC11～13:	SVIGM74HC244
IC14:	QSIGAGN9CX0
IC15:	SVIGHM65256
IC16:	SVIGTLP513
IC17:	SVIGM74LS07
IC18:	SVIGMSM6253
IC19:	SVIGM74H138
IC20:	M74HC139P
IC21:	SVIGM74H02
IC22, 26, 30, 34, 38:	MN6635
IC23, 27, 31, 35, 39:	SVIGBA9221
IC24, 28, 32, 36, 40:	SVIGM5238L
IC25, 29, 33, 37, 41:	SVIGTC4051BP
IC42:	QSIGU3C04733
IC43:	QSIGU3C04738
IC45:	QSIGU3C04724
IC46:	QSIGU3C04726
IC47:	QSIGU3C04730
IC48, 49, 100:	SVIGM74HC374
IC50～89:	SVIGM74H4066
IC90, 91, 93, 94, 96～98, 101, 104, 111:	SVIGM5218L
IC99:	M74HC174P
IC102:	QSIGU3C04725
IC103:	QSIGU3C04731
IC108:	SVIGM74H00
IC109:	SVIGM74H32
IC110:	QSIGU3C04734

- TRANSISTORS

Q2～4, 16:	2SC1047C
Q6～15	2SJ105GR

- DIODES

D1～11, 13～16:	MA165TA5
D12:	MA4056

⑩ MAIN VOLUME

MAX..........................

∫

MIN..........................

⑪ After Touch (LKB)

- After Touch
MIN..........................

∫

MAX..........................

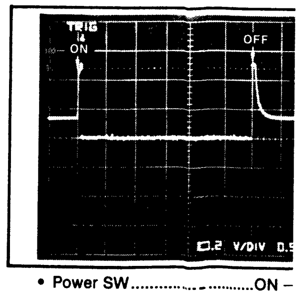
⑫ After Touch (UKB)

- After Touch
MIN..........................

∫

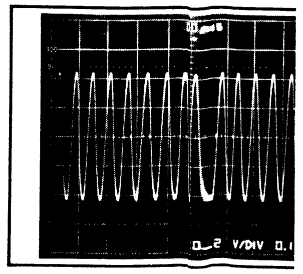
MAX..........................

⑬ RESO

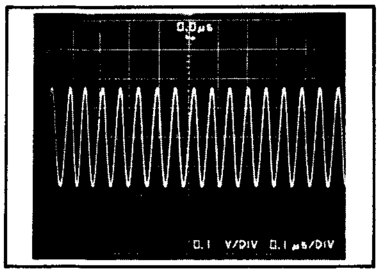


- Power SW..........ON –

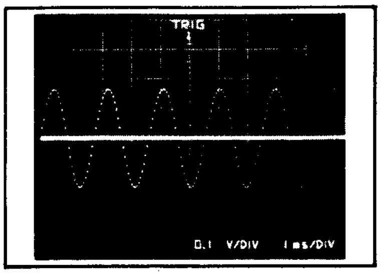
⑭ X2, 16MHz



⑮ X3, 16MHz

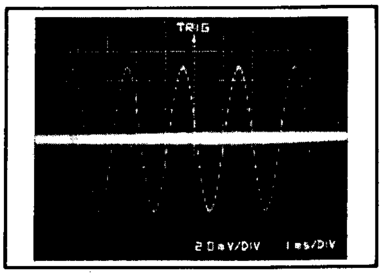


⑯ Upper Tab & Organ



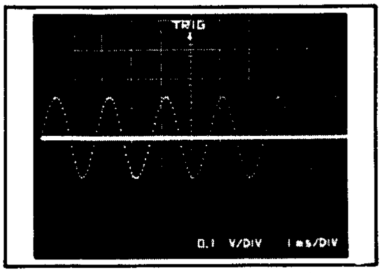
- Upper Tab & Organ............Flute 8′
- Upper Keyboard..................C4 Key

⑰ Upper Tab & Organ



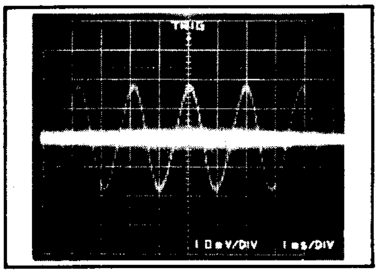
- Upper Tab & Organ............Flute 8′
- Upper Keyboard..................C4 Key

⑱ Lower Tab & Organ



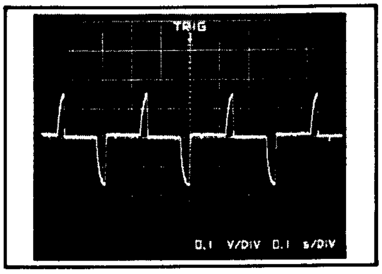
- Lower Tab & Organ............Flute 8′
- Lower Keyboard ....C4 Key

⑲ Lower Tab & Organ



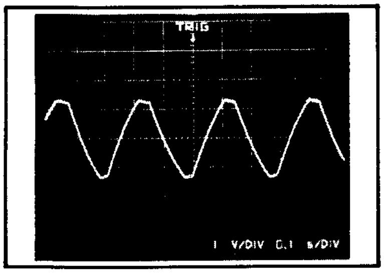
- Lower Tab & Organ............Flute 8′
- Lower Keyboard ....C4 Key

⑳



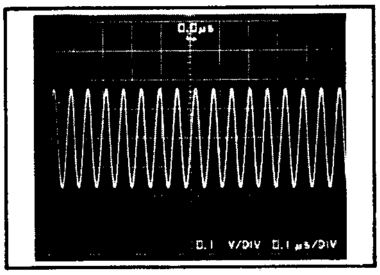
- Lower Extra..........................Mallet (Vibraphone)

㉑

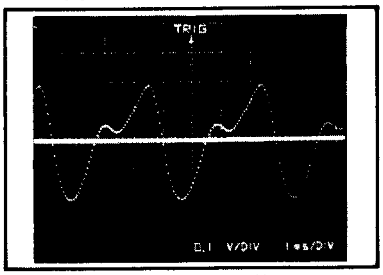


- Lower Extra..........................Mallet (Vibraphone)

㉒ X5, 16MHz

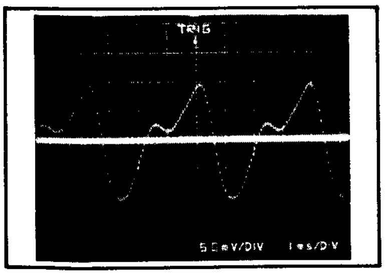


㉓ Upper Poly



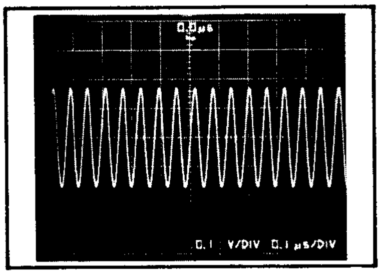
- Upper Poly...........................Horn
- Upper Keyboard..................C4 Key

㉔ Upper Poly

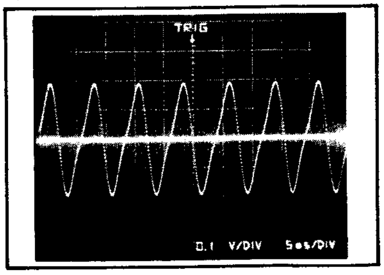


- Upper Poly...........................Horn
- Upper Keyboard..................C4 Key

㉕ X4, 16MHz

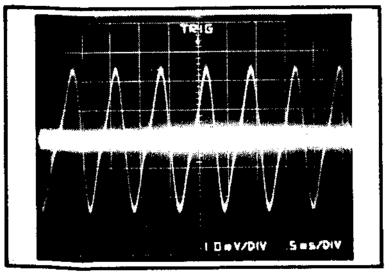


㉖ Bass



- Bass.....................................Bass 8′
- Pedal Keyboard ....C2 Key

㉗ Bass



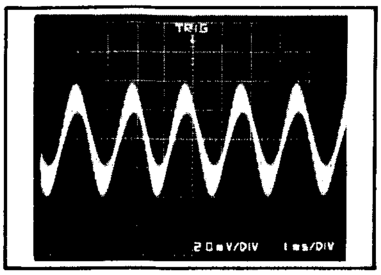
- Bass.....................................Bass 8′
- Pedal Keyboard ....C2 Key

㉘, ㉙

5: MANUAL PART CONDITION			
PAGE 5′ / Check Point	TONE: SOFT	TONE: NORM	TONE: HARD
㉘ HC7	0V (L)	+5V (H)	+5V (H)
㉙ HC6	+5V (H)	0V (L)	+5V (H)

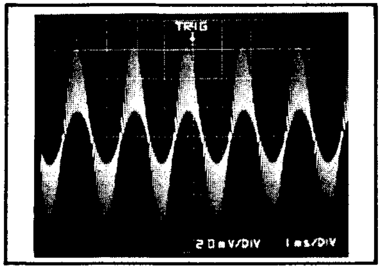
- Sound Setting.....................Page 5 (MANUAL PART CONDITION)
- Part.......................................UTAB (Upper Tab)

㉚ UTAB



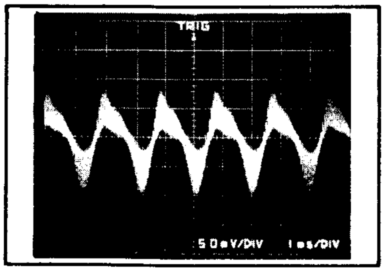
- Sound Setting....................Page 5
- Part...UTAB • Tone...NORM
- U. Tab...Flute 8′ • Upper Key...C4

UTO



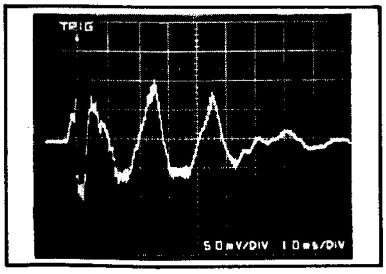
- Upper Tab & Organ............Flute 8′
- Upper Keyboard..................C4 Key

LPO



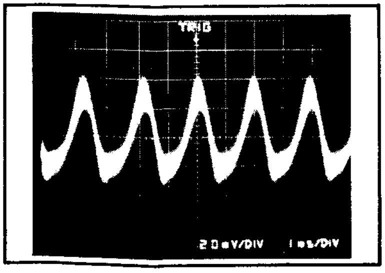
- Lower Poly ....Horn
- Lower Keyboard ....C4 Key

DPL



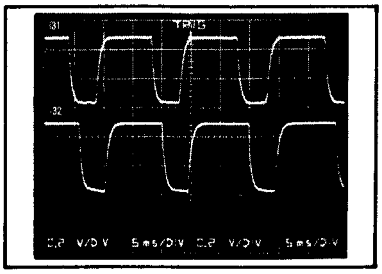
- Keyboard Perc....................ON
- Lower Keyboard ....Bass Drum 1

LPLY



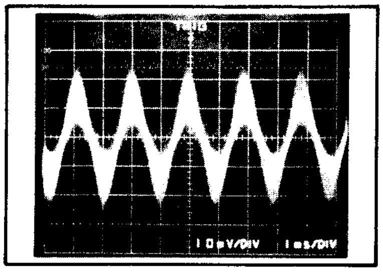
- Sound Setting.....................Page 5
- Part...LPOLY • Tone...NORM
- Lower Poly ....Horn
- Lower Keyboard ....C4 Key

㉛ ROTA, ㉜ ROTB



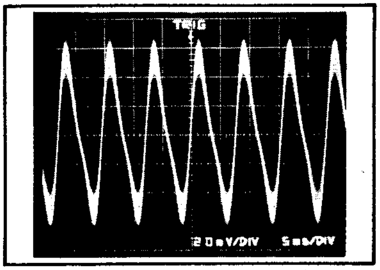
- Tempo/Program..................Clockwise

LTO



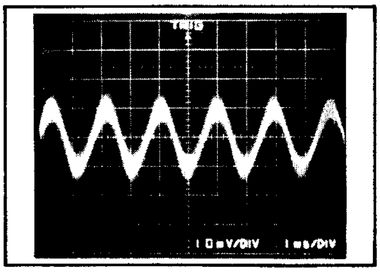
- Lower Tab & Organ............Flute 8′
- Lower Keyboard ....C4 Key

BSO



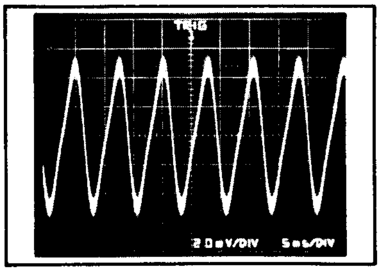
- Bass.....................................Bass 8′
- Pedal Keyboard..................C2 Key

LTAB



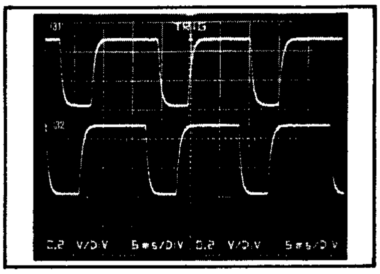
- Sound Setting.....................Page 5
- Part...LTAB • Tone...NORM
- L. Tab...Flute 8′ • Lower Keyboard ...C4 Key

BASS



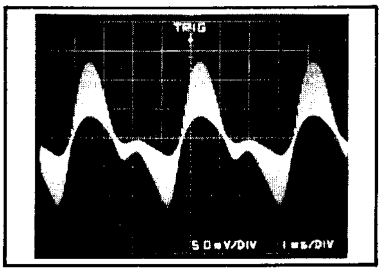
- Sound Setting.....................Page 6
- Part...BASS • Tone...NORM
- Bass.....................................Bass 8′
- Pedal Key............................C2 Key

㉛ ROTA, ㉜ ROTB



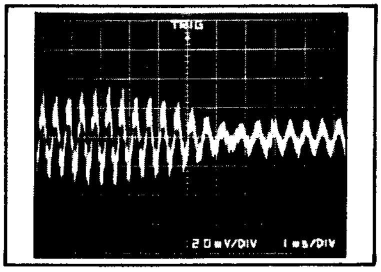
- Tempo/Program..................Counter-clockwise

UPO



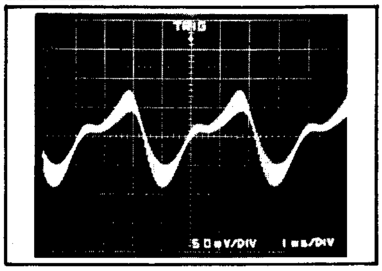
- Upper Poly...........................Horn
- Upper Keyboard..................C4 Key

DPR



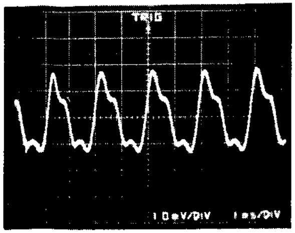
- Keyboard Perc....................ON
- Lower Keyboard ....Whistle 1

UPLY



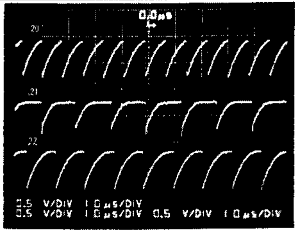
- Sound Setting.....................Page 5
- Part...UPOLY • Tone...NORM
- Upper Poly...........................Horn
- Upper Keyboard..................C4 Key

⑲

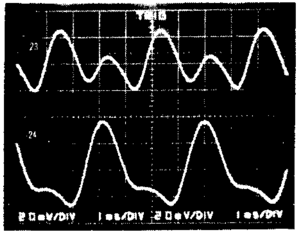


- Upper Special ....Flute
- Effect 2 ....ON
- Upper Keyboard..................C4 Key

⑳, ㉑, ㉒

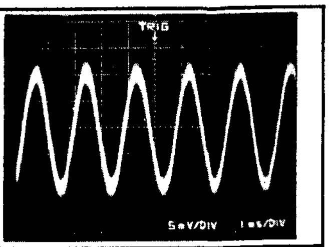


㉓, ㉔



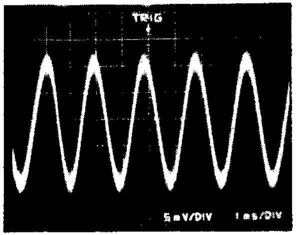
- Upper Poly...........................Horn
- Effect 1 ....ON
- Upper Keyboard..................C4 Key

㉕, ㉖, ㉗



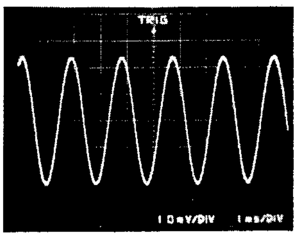
- Upper Tab............................Flute 8′
- Tremolo ....OFF
- Upper Keyboard..................C4 Key

㉘



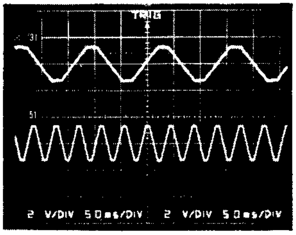
- Upper Tab............................Flute 8′
- Reverb..................................ON
- Upper Keyboard..................C4 Key

㉙, ㉚



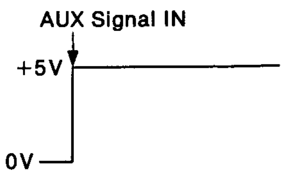
- Upper Tab............................Flute 8′
- Tremolo ....ON
- Upper Keyboard..................C4 Key

㉛, (51)

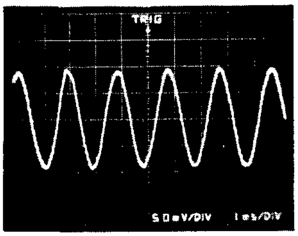


- Tremolo ....Fast

㉜ AUXC

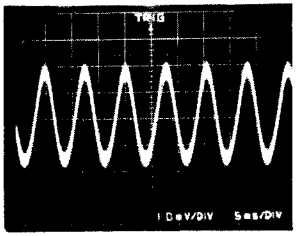


㉝, ㉞, ㉟



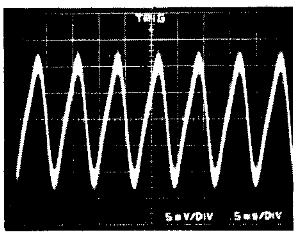
- Upper Tab............................Flute 8′
- Tremolo ....OFF
- EXP, Main Vol.....................Max
- Upper Keyboard..................C4 Key

㊱



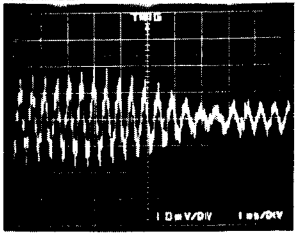
- Bass ....Bass 8′
- EXP, Main Vol.....................Max
- Pedal Keyboard ....C2 Key

㊲, ㊳, ㊴



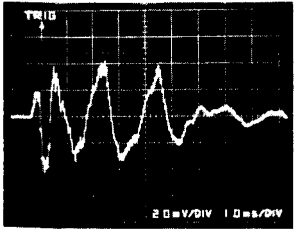
- Bass: Bass 8′ • Mix SW: ON
- EXP, Main Vol.....................Max
- Pedal Keyboard ....C2 Key

㊵



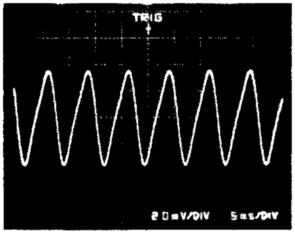
- EXP/DIRECT........................EXP
- EXP, Main Vol.....................Max
- Keyboard Perc ....ON
- Lower Keyboard ....Wistle 1

㊶



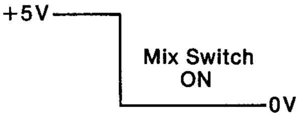
- EXP/DIRECT........................EXP
- EXP, Main Vol......................Max
- Keyboard Perc ....ON
- Lower Keyboard ....Bass Drum 1

㊷

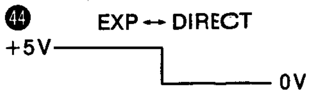


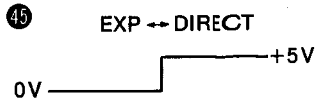
- Bass ....Bass 8′
- EXP/DIRECT........................EXP
- EXP, Main Vol.....................Max
- Pedal Keyboard ....C2 Key

㊸

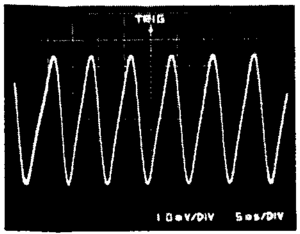


㊹, ㊺ EXP/DIRECT



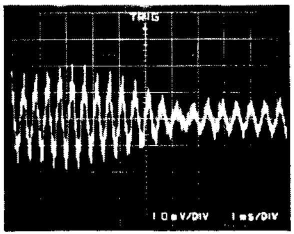


㊻ Bass



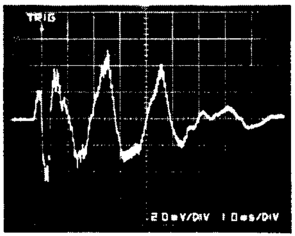
- Bass......................................Bass 8′
- Pedal Keyboard ....C2 Key

㊼ Drum Percussion (Rch)



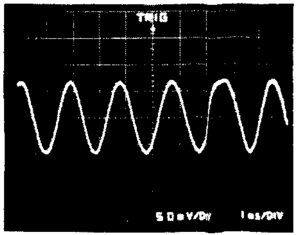
- Keyboard Perc ....ON
- Lower Keyboard ....Whistle 1

㊽ Drum Percussion (L ch)



- Keyboard Perc ....ON
- Lower Keyboard ....Bass Drum 1

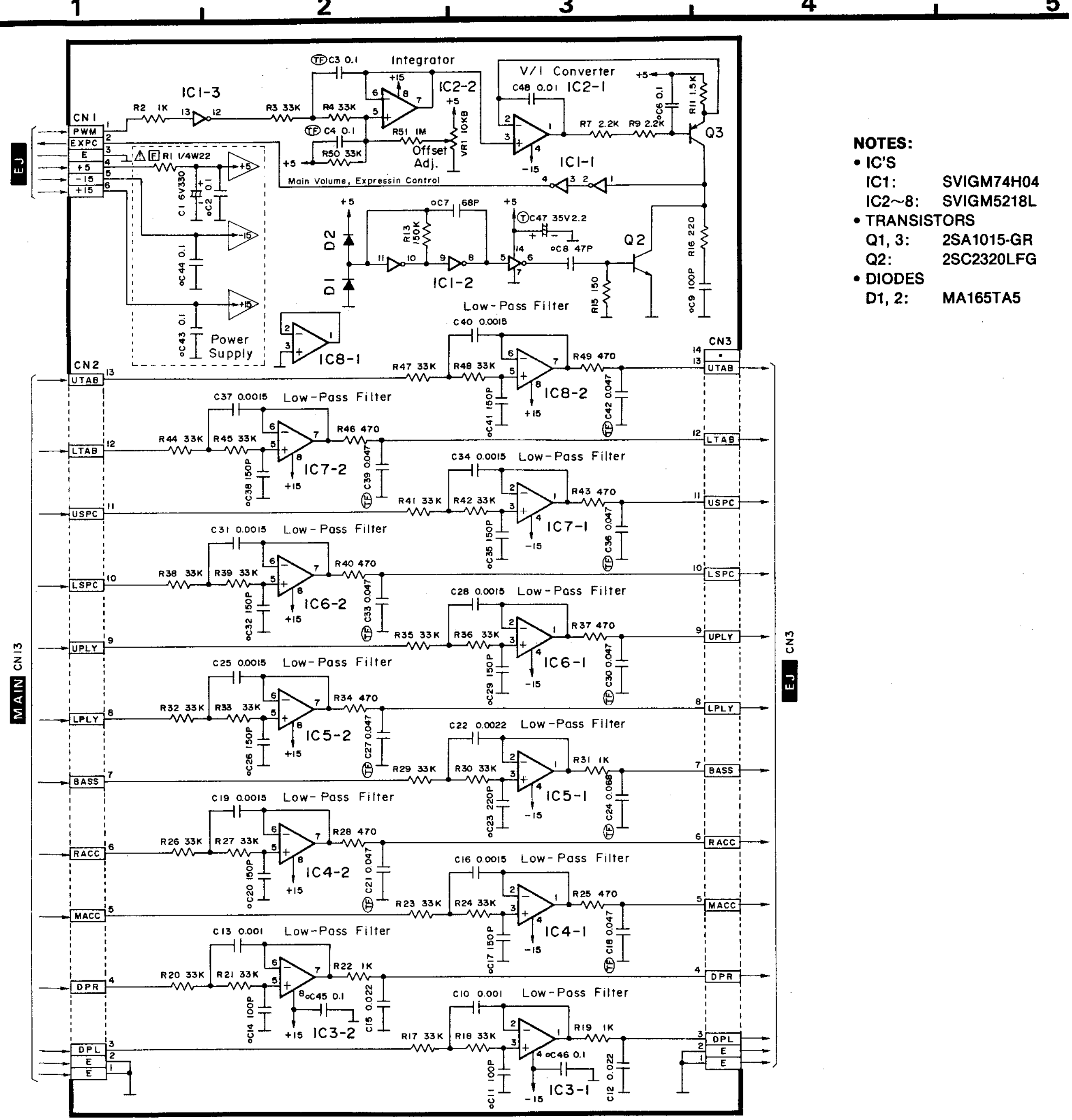
㊾, ㊿



- Upper Tab............................Flute 8′
- Tremolo ....OFF
- EXP, Main Vol.....................Max
- Upper Key............................C4

EXPC

EXPRESSION CONTROL CIRCUIT


1
2
3
4
5
A
B
C
D
E
Integrator
V/I Converter
IC1-3
IC2-2
IC2-1
IC1-1
IC1-2
Q3
Q2
D1
D2
CN1
PWM
EXPC
E
+5
-15
+15
EJ
R1 1/4W22
C1 6V330
C2 0.1
Power Supply
C44 0.1
C43 0.1
R2 1K
R3 33K
R4 33K
C3 0.1
C4 0.1
R50 33K
R51 1M
Offset Adj.
VR1 10KB
C48 0.01
R7 2.2K
R9 2.2K
C6 0.1
R11 1.5K
Main Volume, Expressin Control
R13 150K
C7 68P
C47 35V2.2
C8 47P
R15 150
R16 220
C9 100P
IC8-1
Low-Pass Filter
C40 0.0015
R47 33K
R48 33K
IC8-2
R49 470
C41 150P
C42 0.047
CN2
UTAB
LTAB
USPC
LSPC
UPLY
LPLY
BASS
RACC
MACC
DPR
DPL
MAIN CN13
CN3
C37 0.0015
R44 33K
R45 33K
R46 470
C38 150P
C39 0.047
IC7-2
C34 0.0015
R41 33K
R42 33K
R43 470
C35 150P
C36 0.047
IC7-1
C31 0.0015
R38 33K
R39 33K
R40 470
C32 150P
C33 0.047
IC6-2
C28 0.0015
R35 33K
R36 33K
R37 470
C29 150P
C30 0.047
IC6-1
C25 0.0015
R32 33K
R33 33K
R34 470
C26 150P
C27 0.047
IC5-2
C22 0.0022
R29 33K
R30 33K
R31 1K
C23 220P
C24 0.068
IC5-1
C19 0.0015
R26 33K
R27 33K
R28 470
C20 150P
C21 0.047
IC4-2
C16 0.0015
R23 33K
R24 33K
R25 470
C17 150P
C18 0.047
IC4-1
C13 0.001
R20 33K
R21 33K
R22 1K
C14 100P
C15 0.022
C45 0.1
IC3-2
C10 0.001
R17 33K
R18 33K
R19 1K
C11 100P
C12 0.022
C46 0.1
IC3-1

NOTES:

- IC'S

IC1:	SVIGM74H04
IC2~8:	SVIGM5218L

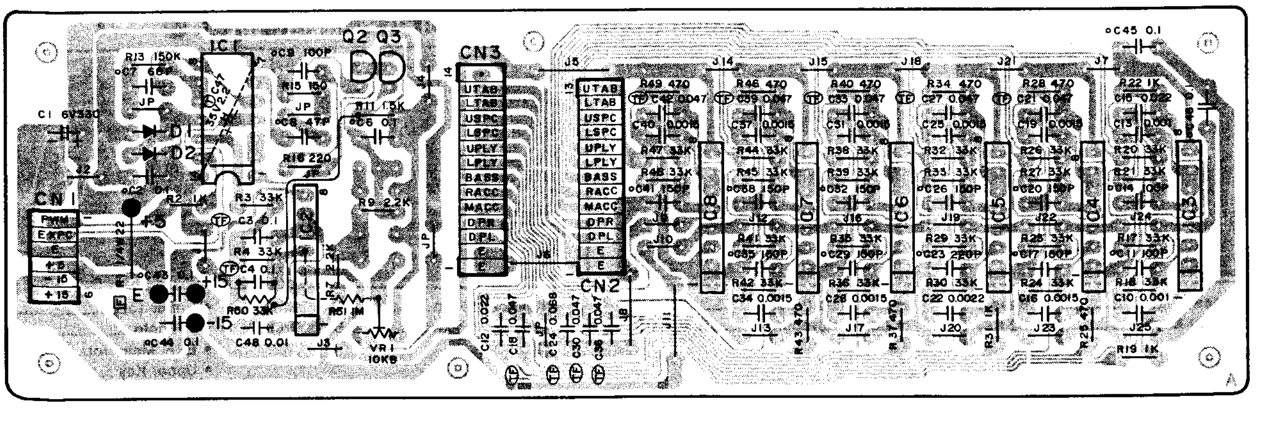
- TRANSISTORS

Q1, 3:	2SA1015-GR
Q2:	2SC2320LFG

- DIODES

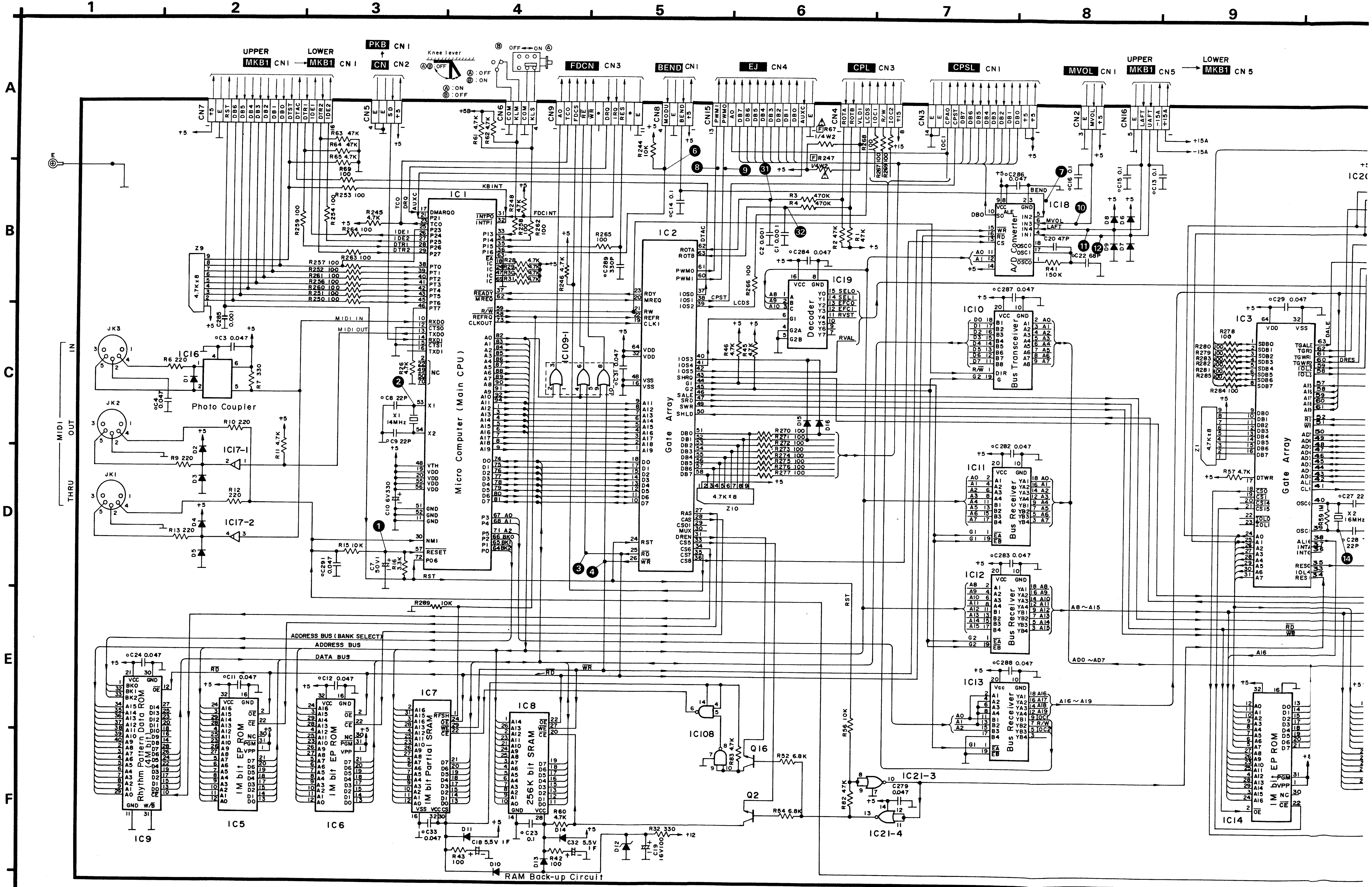
D1, 2:	MA165TA5

SXPG202411

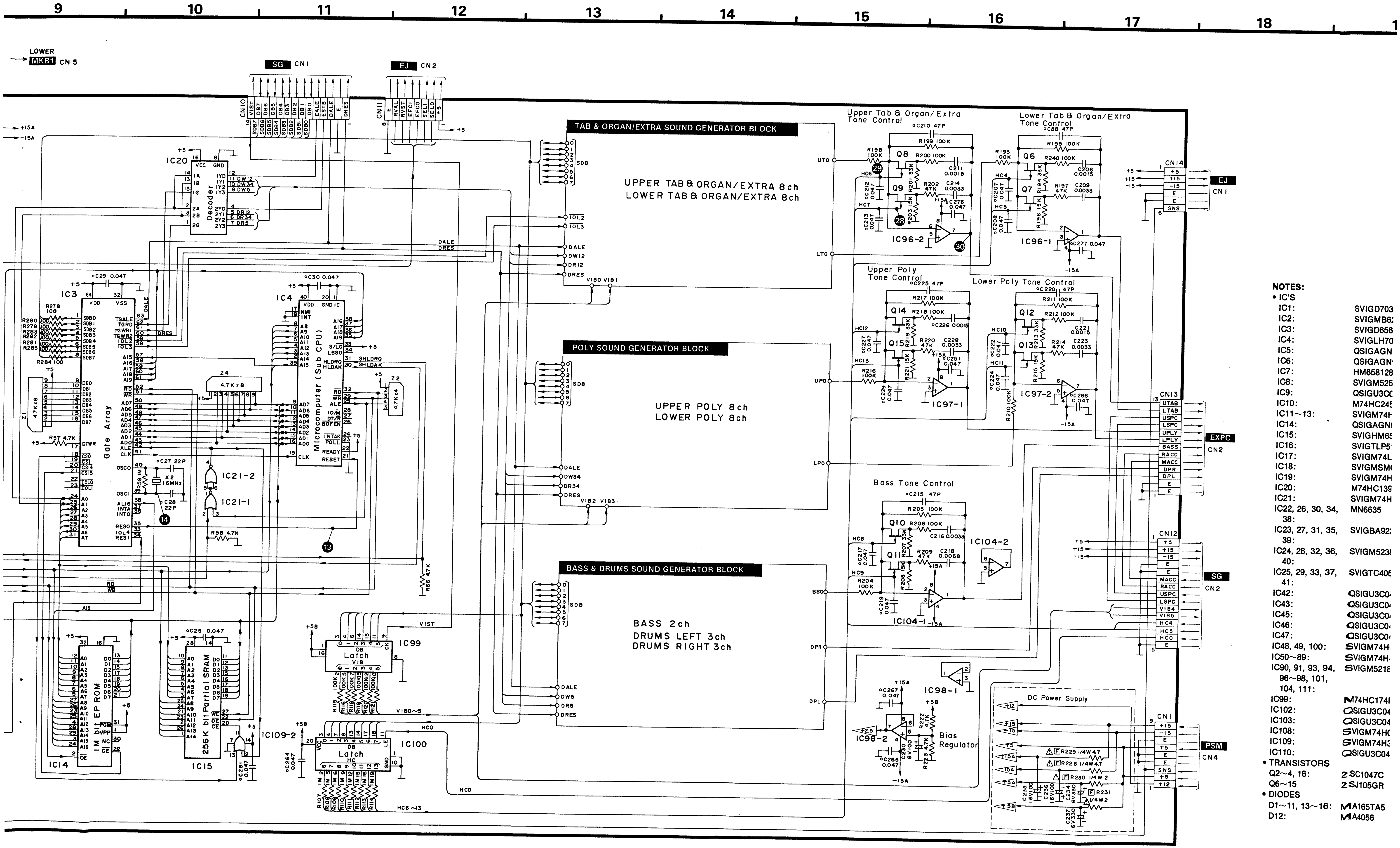

F
CN1
CN2
CN3
IC1
Q2 Q3
D1
D2
VR1 10KB
IC2
IC3
IC4
IC5
IC6
IC7
IC8

MAIN

MAIN CIRCUIT DIAGRAM



1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
UPPER MKB1 CN1 → LOWER MKB1 CN1
PKB CN1
CN CN2
Knee lever
Ⓐ : OFF
Ⓑ : ON
Ⓐ : ON
Ⓑ : OFF
OFF ↔ ON
FDCN CN3
BEND CN1
EJ CN4
CPL CN3
CPSL CN1
MVOL CN1
UPPER MKB1 CN5 → LOWER MKB1 CN5
CN7
CN5
CN6
CN9
CN8
CN15
CN4
CN3
CN2
CN16
IC1
Micro Computer (Main CPU)
IC2
Gate Array
IC3
Gate Array
IC5
1M bit EP ROM
IC6
1M bit EP ROM
IC7
1M bit Partial SRAM
IC8
256K bit SRAM
IC9
Rhythm Pattern Data ROM (4M bit)
IC10
Bus Transceiver
IC11
Bus Receiver
IC12
Bus Receiver
IC13
Bus Receiver
IC14
1M bit EP ROM
IC16
Photo Coupler
IC17-1
IC17-2
IC18
A/D Converter
IC19
Decoder
IC108
IC109-1
IC21-3
IC21-4
Q16
Q2
JK3
JK2
JK1
MIDI
IN
OUT
THRU
X1 14MHz
X2 16MHz
Z9 4.7K×8
Z10 4.7K×8
Z1 4.7K×8
ADDRESS BUS (BANK SELECT)
ADDRESS BUS
DATA BUS
A8 ~ A15
A16 ~ A19
AD0 ~ AD7
RAM Back-up Circuit


9
10
11
12
13
14
15
16
17
18
LOWER
MKB1 CN 5
SG CN1
EJ CN2
TAB & ORGAN/EXTRA SOUND GENERATOR BLOCK
UPPER TAB & ORGAN/EXTRA 8ch
LOWER TAB & ORGAN/EXTRA 8ch
POLY SOUND GENERATOR BLOCK
UPPER POLY 8ch
LOWER POLY 8ch
BASS & DRUMS SOUND GENERATOR BLOCK
BASS 2ch
DRUMS LEFT 3ch
DRUMS RIGHT 3ch
Upper Tab & Organ/Extra Tone Control
Lower Tab & Organ/Extra Tone Control
Upper Poly Tone Control
Lower Poly Tone Control
Bass Tone Control
DC Power Supply
Bias Regulator
IC3 Gate Array
IC4 Microcomputer (Sub CPU)
IC20 Decoder
IC14 1M bit EP ROM
IC15 256K bit Partial SRAM
IC99 Latch
IC100 Latch
IC21-1
IC21-2
IC109-2
IC96-1
IC96-2
IC97-1
IC97-2
IC98-1
IC98-2
IC104-1
IC104-2
CN14 EJ CN1
CN13 EXPC CN2
CN12 SG CN2
CN1 PSM CN4
X2 16MHz
Z4 4.7K x 8
Z2 4.7K x 4
Z1 4.7K x 8

NOTES:

- IC'S

IC1: SVIGD703
IC2: SVIGMB6
IC3: SVIGD656
IC4: SVIGLH70
IC5: QSIGAGN
IC6: QSIGAGN
IC7: HM658128
IC8: SVIGM525
IC9: QSIGU3C
IC10: M74HC24
IC11~13: SVIGM74
IC14: QSIGAGN
IC15: SVIGHM6
IC16: SVIGTLP5
IC17: SVIGM74L
IC18: SVIGMSM
IC19: SVIGM74H
IC20: M74HC139
IC21: SVIGM74H
IC22, 26, 30, 34, 38: MN6635
IC23, 27, 31, 35, 39: SVIGBA92
IC24, 28, 32, 36, 40: SVIGM523
IC25, 29, 33, 37, 41: SVIGTC40
IC42: QSIGU3C0
IC43: QSIGU3C0
IC45: QSIGU3C0
IC46: QSIGU3C0
IC47: QSIGU3C0
IC48, 49, 100: SVIGM74H
IC50~89: SVIGM74H
IC90, 91, 93, 94, 96~98, 101, 104, 111: SVIGM521
IC99: M74HC174
IC102: QSIGU3C04
IC103: QSIGU3C04
IC108: SVIGM74H
IC109: SVIGM74H
IC110: QSIGU3C04

- TRANSISTORS

Q2~4, 16: 2SC1047C
Q6~15 2SJ105GR

- DIODES

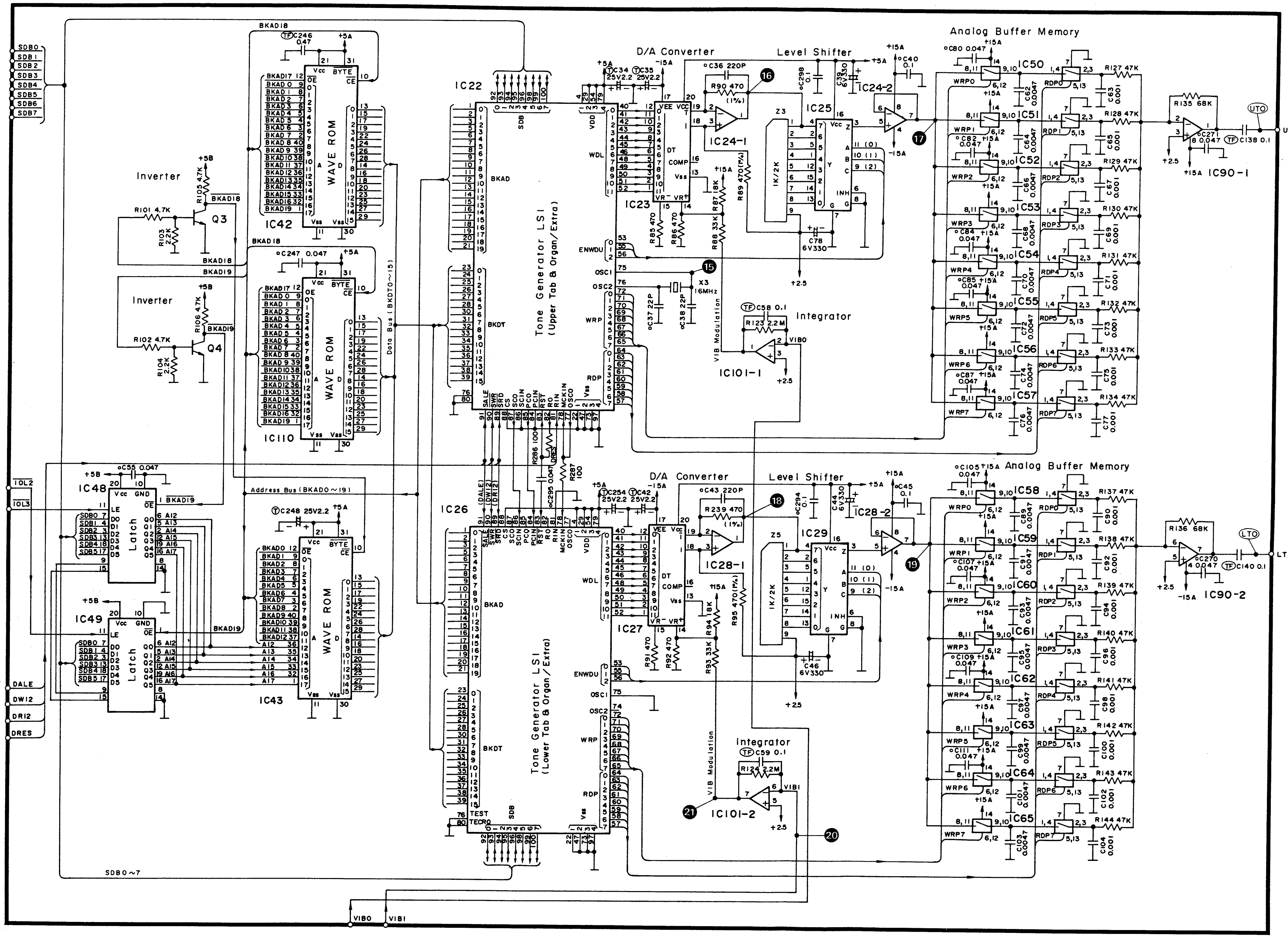
D1~11, 13~16: MA165TA5
D12: MA4056

MAIN CIRCUIT SOUND GENERATORS

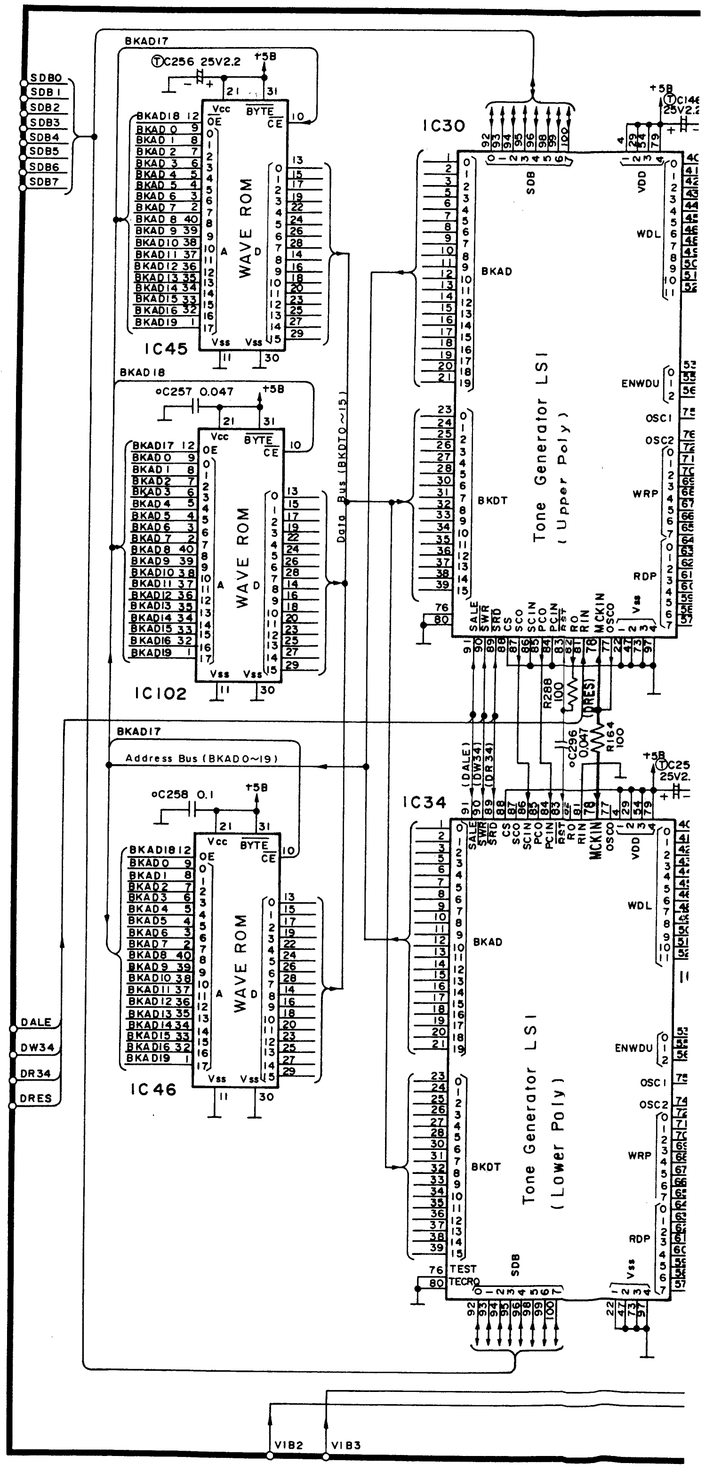
1 2 3 4 5 6 7 8 9 10

A B C D E F

■TAB & ORGAN / EXTRA SOUND GENERATOR BLOCK

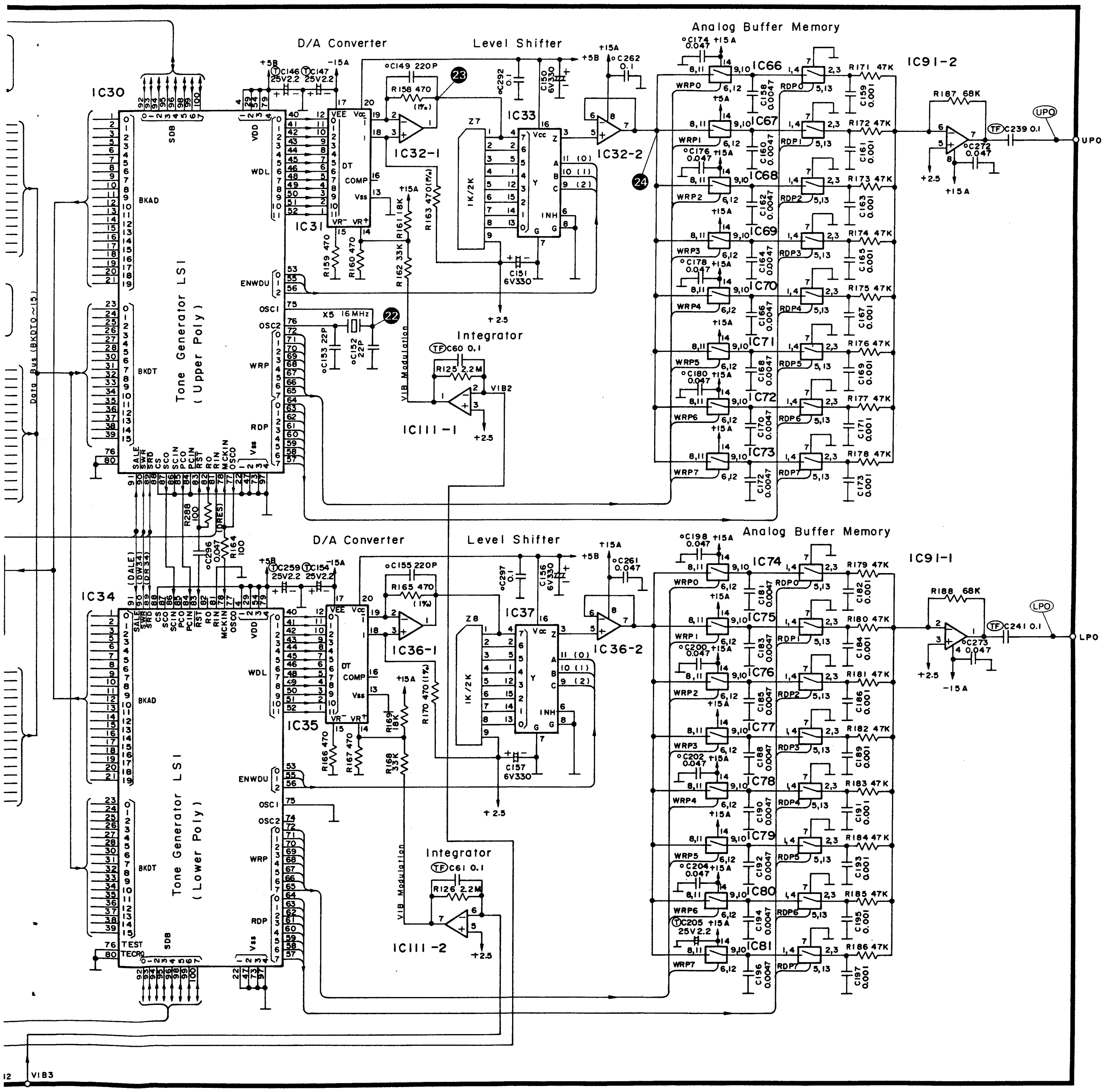

SDB0
SDB1
SDB2
SDB3
SDB4
SDB5
SDB6
SDB7
BKAD18
TF C246 0.047
+5A
IC42
WAVE ROM
Inverter
R105 4.7K
+5B
R101 4.7K
R103 22K
Q3
BKAD18
BKAD19
TF C247 0.047
Inverter
R106 4.7K
R102 4.7K
R104 22K
Q4
BKAD19
IC110
WAVE ROM
Data Bus (BKDT0~15)
IC22
BKAD
BKDT
Tone Generator LSI (Upper Tab & Organ/Extra)
SDB
VDD
WDL
ENWDU
OSC1
OSC2
WRP
RDP
Vss
D/A Converter
C34 25V2.2
C35 25V2.2
C36 220P
R90 470 (1%)
16
IC23
IC24-1
DT
COMP
VEE
VR-
VR+
R87 18K
R88 33K
R85 470
R86 470
R89 470(1%)
15
X3 16MHz
C37 22P
C38 22P
VIB Modulation
Level Shifter
Z3
1K/2K
IC25
INH
C298 0.1
C39 6V330
C78 6V330
IC24-2
17
+15A
-15A
+2.5
C40 0.1
Integrator
TF C58 0.1
R123 2.2M
VIB0
IC101-1
Analog Buffer Memory
C80 0.047
IC50
IC51
IC52
IC53
IC54
IC55
IC56
IC57
WRP0
WRP1
WRP2
WRP3
WRP4
WRP5
WRP6
WRP7
RDP0
RDP1
RDP2
RDP3
RDP4
RDP5
RDP6
RDP7
R127 47K
R128 47K
R129 47K
R130 47K
R131 47K
R132 47K
R133 47K
R134 47K
R135 68K
C271 0.047
TF C138 0.1
UTO
IC90-1
IOL2
IOL3
+5B
C55 0.047
IC48
Latch
LE
BKAD19
IC49
Latch
DALE
DW12
DR12
DRES
Address Bus (BKAD0~19)
TF C248 25V2.2
WAVE ROM
IC43
IC26
Tone Generator LSI (Lower Tab & Organ/Extra)
R286 100
R287 100
C299 0.0047
TEST
TECRO
D/A Converter
C254 25V2.2
C42 25V2.2
C43 220P
R239 470 (1%)
18
IC27
IC28-1
R94 18K
R93 33K
R91 470
R92 470
R95 470(1%)
Level Shifter
Z5
1K/2K
IC29
C294 0.1
C44 6V330
C46 6V330
IC28-2
19
C45 0.1
Integrator
TF C59 0.1
R124 2.2M
VIB1
IC101-2
21
20
Analog Buffer Memory
C105 0.047
IC58
IC59
IC60
IC61
IC62
IC63
IC64
IC65
R137 47K
R138 47K
R139 47K
R140 47K
R141 47K
R142 47K
R143 47K
R144 47K
R136 68K
C270 0.047
TF C140 0.1
LTO
IC90-2
SDB0~7
VIB0
VIB1

■POLY SOUND GENERATOR BLOCK

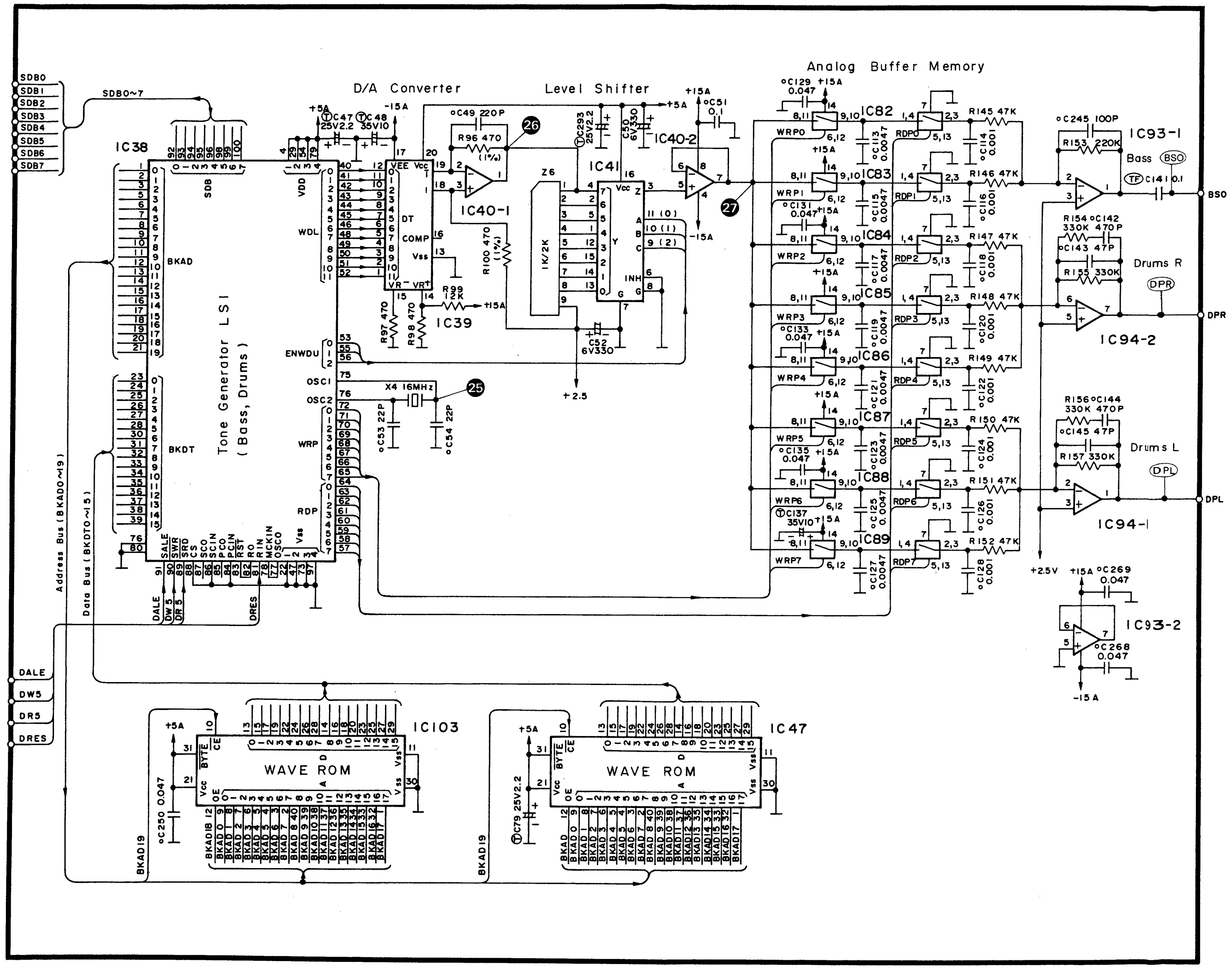

SDB0
SDB1
SDB2
SDB3
SDB4
SDB5
SDB6
SDB7
BKAD17
TF C256 25V2.2
+5B
IC45
WAVE ROM
BKAD18
C257 0.047
IC102
WAVE ROM
Data Bus (BKDT0~15)
IC30
BKAD
BKDT
Tone Generator LSI (Upper Poly)
SDB
VDD
WDL
ENWDU
OSC1
OSC2
WRP
RDP
R288 100
R164 100
C296 0.0047
BKAD17
Address Bus (BKAD0~19)
C258 0.1
IC46
WAVE ROM
DALE
DW34
DR34
DRES
IC34
Tone Generator LSI (Lower Poly)
TEST
TECRO
VIB2
VIB3

9 10 11 12 13 14 15 16 17 18 19

ENERATOR BLOCK


IC30
Tone Generator LSI (Upper Poly)
IC31
D/A Converter
IC32-1
Level Shifter
IC33
IC32-2
Analog Buffer Memory
IC66
IC67
IC68
IC69
IC70
IC71
IC72
IC73
IC91-2
UPO
X5 16MHz
Integrator
IC111-1
VIB Modulation
VIB2
Data Bus (BKDT0~15)
IC34
Tone Generator LSI (Lower Poly)
IC35
D/A Converter
IC36-1
Level Shifter
IC37
IC36-2
Analog Buffer Memory
IC74
IC75
IC76
IC77
IC78
IC79
IC80
IC81
IC91-1
LPO
Integrator
IC111-2
VIB3

■ BASS & DRUMS SOUND GENERATOR BLOCK


SDB0~7
IC38
Tone Generator LSI (Bass, Drums)
D/A Converter
IC39
IC40-1
Level Shifter
IC41
IC40-2
Analog Buffer Memory
IC82
IC83
IC84
IC85
IC86
IC87
IC88
IC89
IC93-1
Bass BSO
IC94-2
Drums R DPR
IC94-1
Drums L DPL
IC93-2
X4 16MHz
Address Bus (BKDT0~15)
Data Bus (BKAD0~19)
DALE
DW5
DR5
DRES
IC103
WAVE ROM
IC47
WAVE ROM

NOTES:

- IC'S

IC1: SVIGD70320GJ
IC2: SVIGMB621407
IC3: SVIGD656C329
IC4: SVIGLH701088
IC5: QSIGAGN9BX0
IC6: QSIGAGN9AX0
IC7: HM658128P12
IC8: SVIGM5256BLL
IC9: QSIGU3C04742
IC10: M74HC245P
IC11~13: SVIGM74HC244
IC14: QSIGAGN9CX0
IC15: SVIGHM65256
IC16: SVIGTLP513
IC17: SVIGM74LS07
IC18: SVIGMSM6253
IC19: SVIGM74H138
IC20: M74HC139P
IC21: SVIGM74H02
IC22, 26, 30, 34, 38: MN6635
IC23, 27, 31, 35, 39: SVIGBA9221
IC24, 28, 32, 36, 40: SVIGM5238L
IC25, 29, 33, 37, 41: SVIGTC4051BP
IC42: QSIGU3C04733
IC43: QSIGU3C04738
IC45: QSIGU3C04724
IC46: QSIGU3C04726
IC47: QSIGU3C04730
IC48, 49, 100: SVIGM74HC374
IC50~89: SVIGM74H4066
IC90, 91, 93, 94, 96~98, 101, 104, 111: SVIGM5218L
IC99: M74HC174P
IC102: QSIGU3C04725
IC103: QSIGU3C04731
IC108: SVIGM74H00
IC109: SVIGM74H32
IC110: QSIGU3C04734

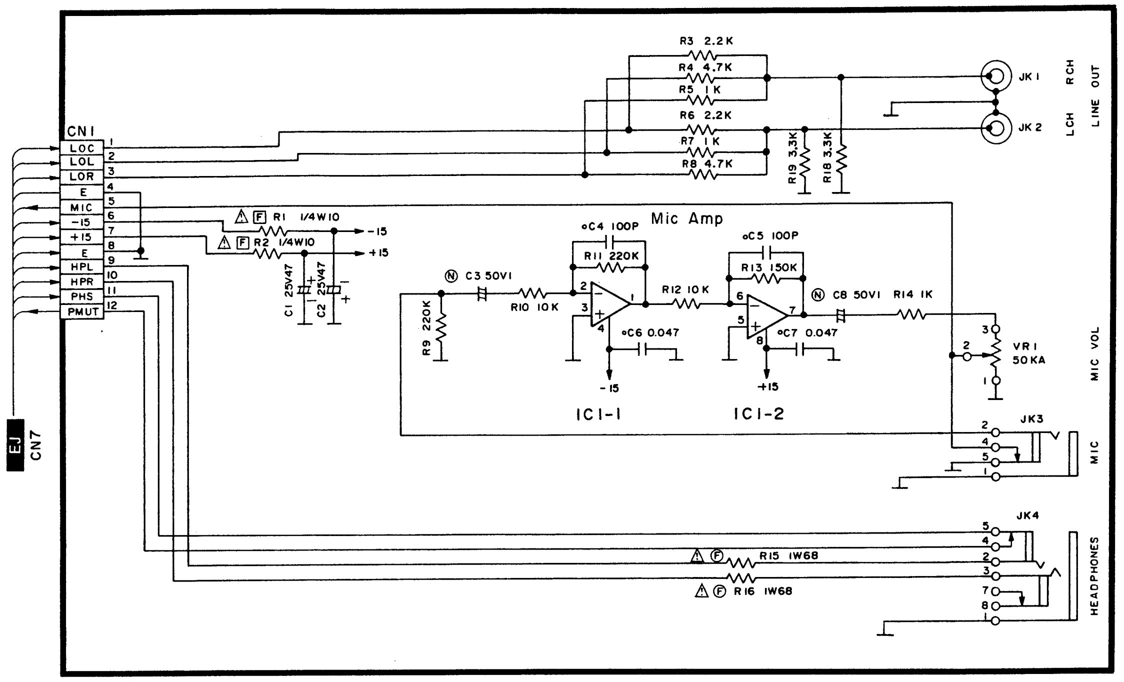
- TRANSISTORS

Q2~4, 16: 2SC1047C
Q6~15 2SJ105GR

- DIODES

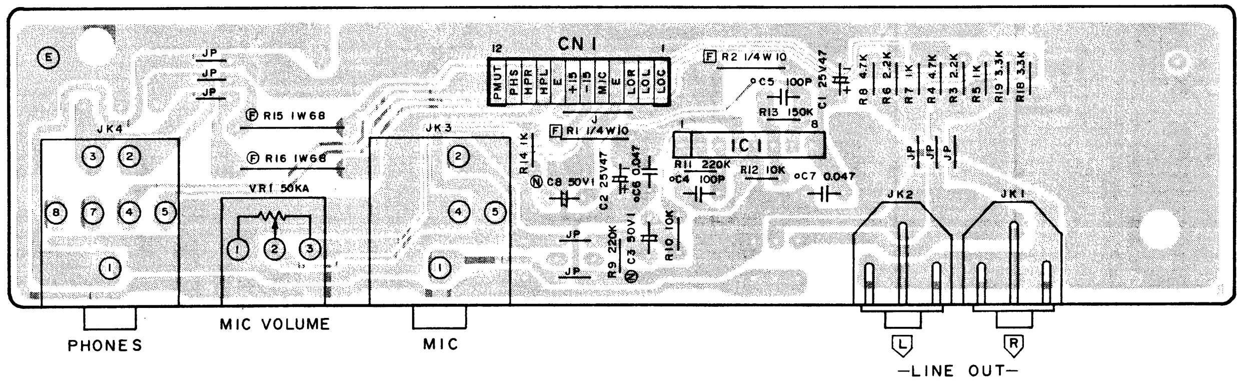
D1~11, 13~16: MA165TA5
D12: MA4056

JACK
JACK CIRCUIT DIAGRAM & CIRCUIT BOARD



CN1
LOC
LOL
LOR
E
MIC
-15
+15
E
HPL
HPR
PHS
PMUT
R3 2.2K
R4 4.7K
R5 1K
R6 2.2K
R7 1K
R8 4.7K
R19 3.3K
R18 3.3K
JK1
JK2
RCH
LCH
LINE OUT
R1 1/4W10
R2 1/4W10
-15
+15
C1 25V47
C2 25V47
Mic Amp
C4 100P
R11 220K
C5 100P
R13 150K
C3 50V1
R10 10K
R9 220K
R12 10K
C6 0.047
C7 0.047
C8 50V1
R14 1K
IC1-1
IC1-2
VR1 50KA
MIC VOL
JK3
MIC
JK4
R15 1W68
R16 1W68
HEADPHONES
EJ CN7

SXPG201411

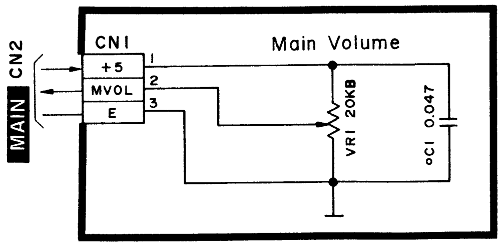


CN1
PMUT
PHS
HPR
HPL
E
+15
-15
MIC
E
LOR
LOL
LOC
R2 1/4W10
R1 1/4W10
R15 1W68
R16 1W68
JK4
JK3
VR1 50KA
IC1
R11 220K
C4 100P
R12 10K
C7 0.047
C5 100P
R13 150K
C1 25V47
R8 4.7K
R6 2.2K
R7 1K
R4 4.7K
R3 2.2K
R5 1K
R19 3.3K
R18 3.3K
JK2
JK1
R14 1K
C8 50V1
C2 25V47
C6 0.047
R9 220K
C3 50V1
R10 10K
JP
PHONES
MIC VOLUME
MIC
L
R
—LINE OUT—

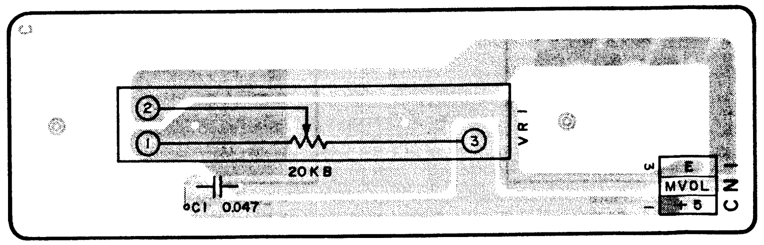
NOTES:
- IC
  IC1: SVIGM5218L

MVOL
MAIN VOLUME CIRCUIT

SXPG200711E



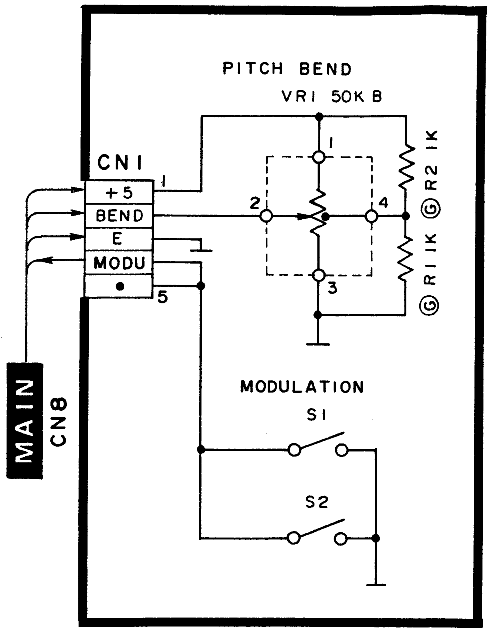
MAIN CN2
CN1
+5
MVOL
E
Main Volume
VR1 20KB
C1 0.047



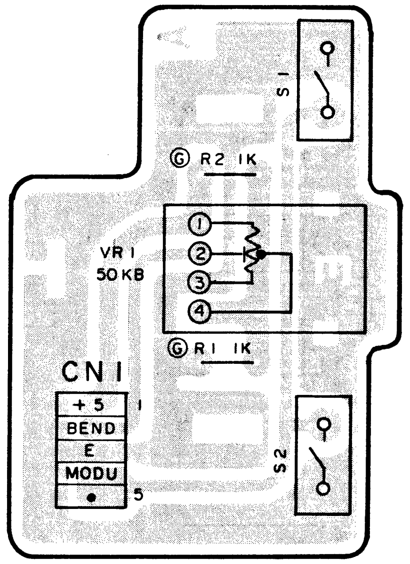
VR1
20KB
C1 0.047
CN1
E
MVOL
+5

BEND
PITCH BEND CIRCUIT

SXPG145911

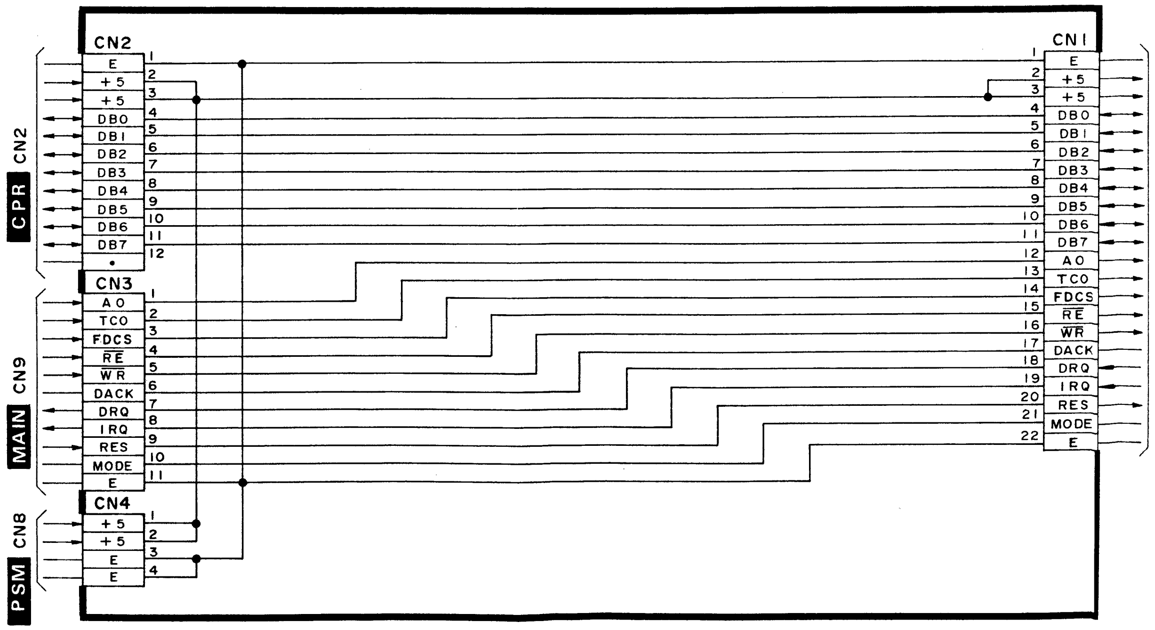


PITCH BEND
VR1 50K B
CN1
+5
BEND
E
MODU
R2 1K
R1 1K
MODULATION
S1
S2
MAIN CN8



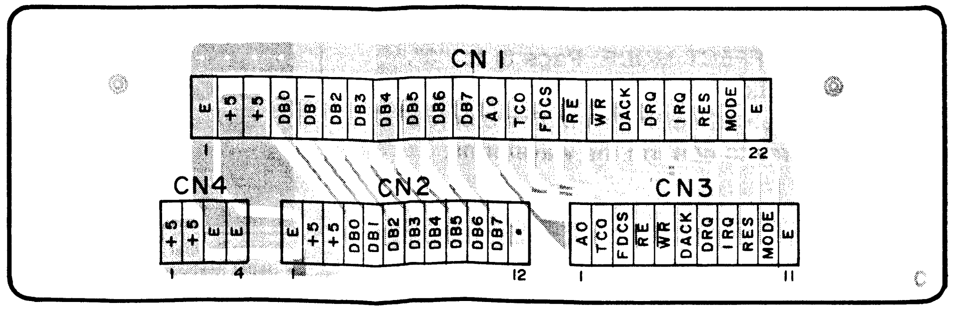
S1
R2 1K
VR1 50KB
R1 1K
CN1
+5
BEND
E
MODU
S2

FDCN
FD CONNECTOR CIRCUIT



CN2
E
+5
+5
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
CN3
A0
TCO
FDCS
RE
WR
DACK
DRQ
IRQ
RES
MODE
E
CN4
+5
+5
E
E
CPR CN2
MAIN CN9
PSM CN8
CN1
FDC

SXPG200711D

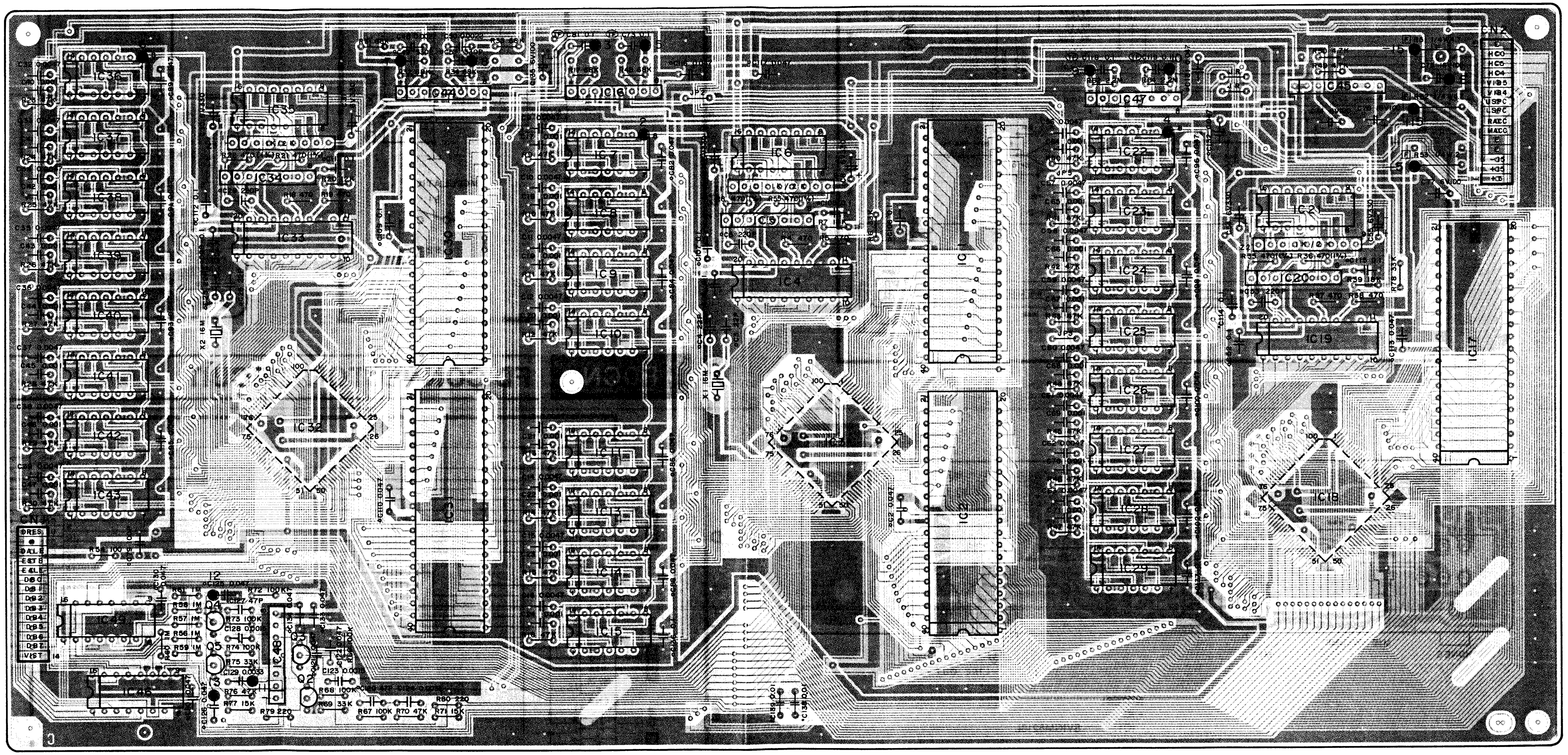


CN1
E
+5
+5
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
A0
TCO
FDCS
RE
WR
DACK
DRQ
IRQ
RES
MODE
E
CN4
CN2
CN3

SOUND GENERATOR CIRCUIT BOARD

Circuit view on top of P.C.B.

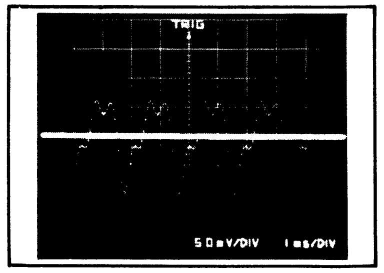
SXPG200211


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
IC36
IC35
IC37
IC34
IC38
IC33
IC39
IC40
IC41
IC32
IC42
IC43
IC49
IC46
IC47
IC7
IC8
IC9
IC10
IC13
IC14
IC15
IC6
IC5
IC4
IC3
IC22
IC23
IC24
IC25
IC26
IC27
IC28
IC29
IC2
IC20
IC19
IC18
IC17
IC45
X2 16M
X1 16M
RES
ALE
EST
ALE
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
VST
HC0
HC5
HC6
HC4
VIB5
VIB4
USPC
LSPC
RACC
MACC
+5V
-5V
R72 100K
R73 100K
R74 100K
R75 33K
R76 47K
R77 15K
R78 220
R67 100K
R70 47K
R71 15K
R68 100K
R69 33K
R80 220
R56 1M
R57 1M
R58 1M
R59 1M
C127 47P
C128 0.001
C129 0.0033
C123 0.001

■ **Measuring Conditions**

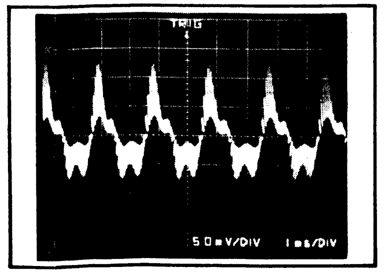
1. Set to the initial mode. (Refer to page I-3)
2. Set the all parts INITIAL TOUCH SENSE function (EFFECT MODE: Page 6) to "0". (Upper=0, Lower=0, Bass=0)
3. Change the unit setting as indicate below the pictures to confirm the waveforms.

② Upper Special



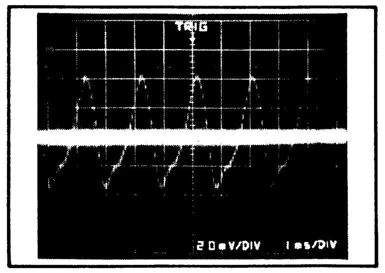
- Upper Special ....Flute
- Upper Keyboard..................C4 Key

③ Upper Special



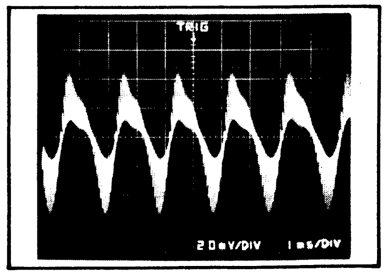
- Upper Special ....Flute
- Upper Keyboard..................C4 Key

④ Lower Special



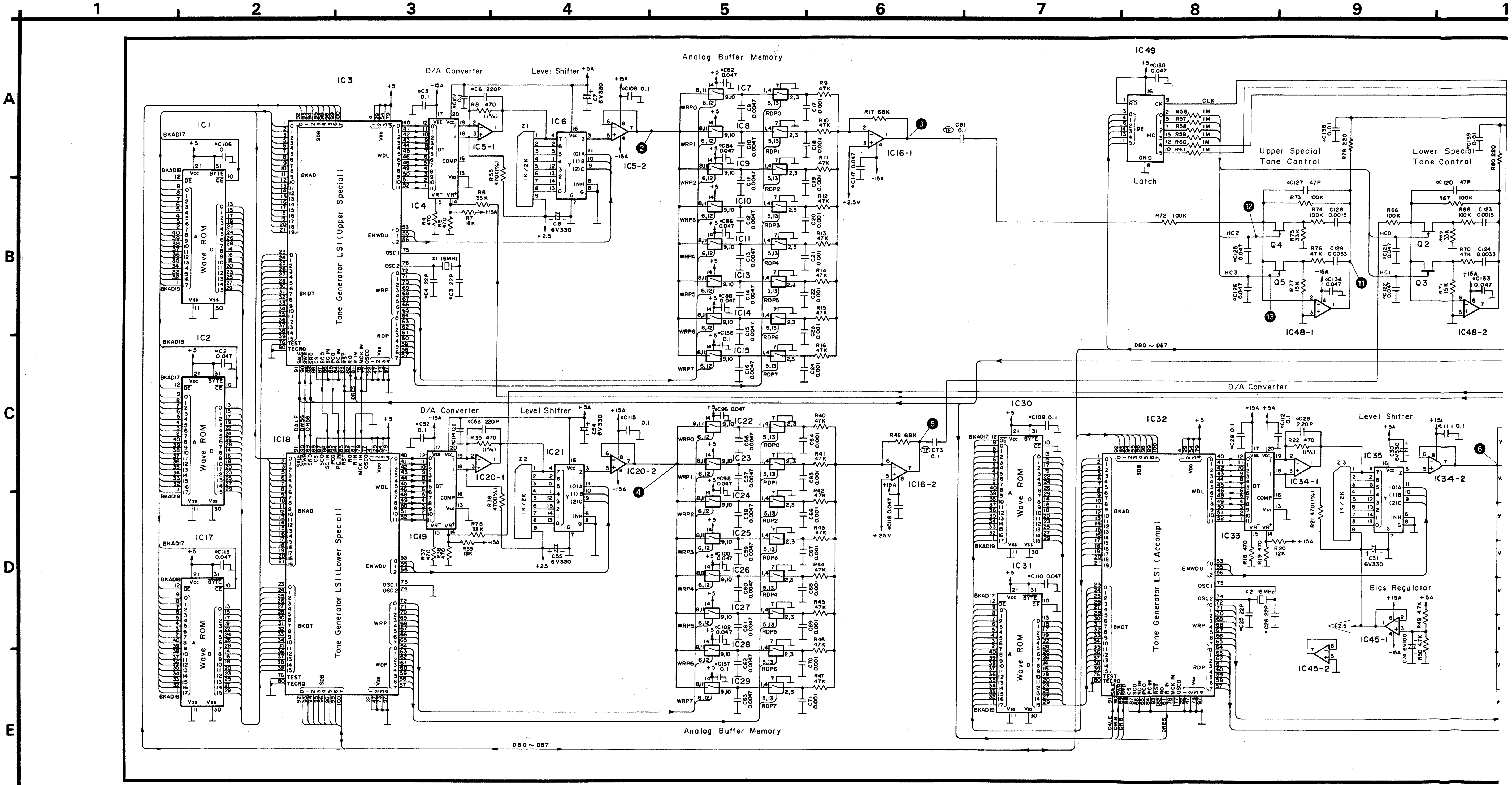
- Lower Special.....................Horn
- Lower Keyboard ....C4 Key

⑤ Lower Special

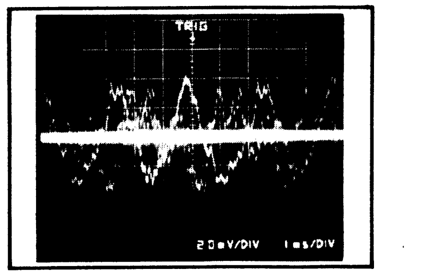


- Lower Special.....................Horn
- Lower Keyboard ....C4 Key

SG SOUND GENERATOR CIRCUIT DIAGRAM

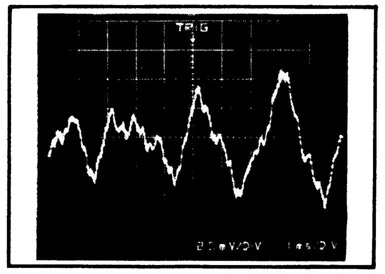

1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
IC1
IC2
IC17
Wave ROM
BKADI7
BKADI8
BKADI9
IC3
Tone Generator LSI (Upper Special)
IC18
Tone Generator LSI (Lower Special)
D/A Converter
IC4
IC5-1
IC5-2
Level Shifter
IC6
IC19
IC20-1
IC20-2
IC21
1K/2K
Z1
Z2
X1 16MHz
Analog Buffer Memory
IC7
IC8
IC9
IC10
IC11
IC13
IC14
IC15
IC22
IC23
IC24
IC25
IC26
IC27
IC28
IC29
IC16-1
IC16-2
R17 68K
R48 68K
C81 0.1
C73 0.1
+2.5V
DB0 ~ DB7
IC49
Latch
CLK
Upper Special Tone Control
Lower Special Tone Control
Q2
Q3
Q4
Q5
IC48-1
IC48-2
D/A Converter
IC30
IC31
IC32
Tone Generator LSI (Accomp)
IC33
IC34-1
IC34-2
IC35
X2 16MHz
Bias Regulator
IC45-1
IC45-2
Level Shifter
②
③
④
⑤
⑥
⑪
⑫
⑬

❻ Accomp 1



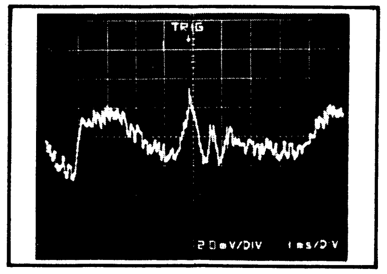
- Rhythm ....Hard Rock
- Arranger..............................Accomp 1
- LKB: C Key • Start/Stop: Start

❼ Accomp 1



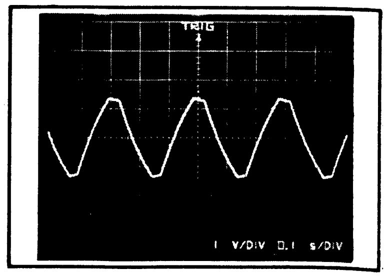
- Rhythm ....Hard Rock
- Arranger..............................Accomp 1
- LKB: C Key • Start/Stop: Start

❽ Accomp 2 & 3



- Rhythm ....Hard Rock
- Arranger..............................Accomp 2 & 3
- LKB: C Key • Start/Stop: Start

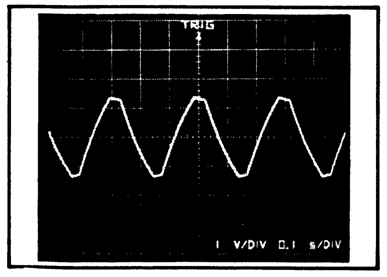
❾



- Upper Special ....Mallet (Vibraphone)

(Sound Setting: Page 1
VARI=3 (USPC))

❿

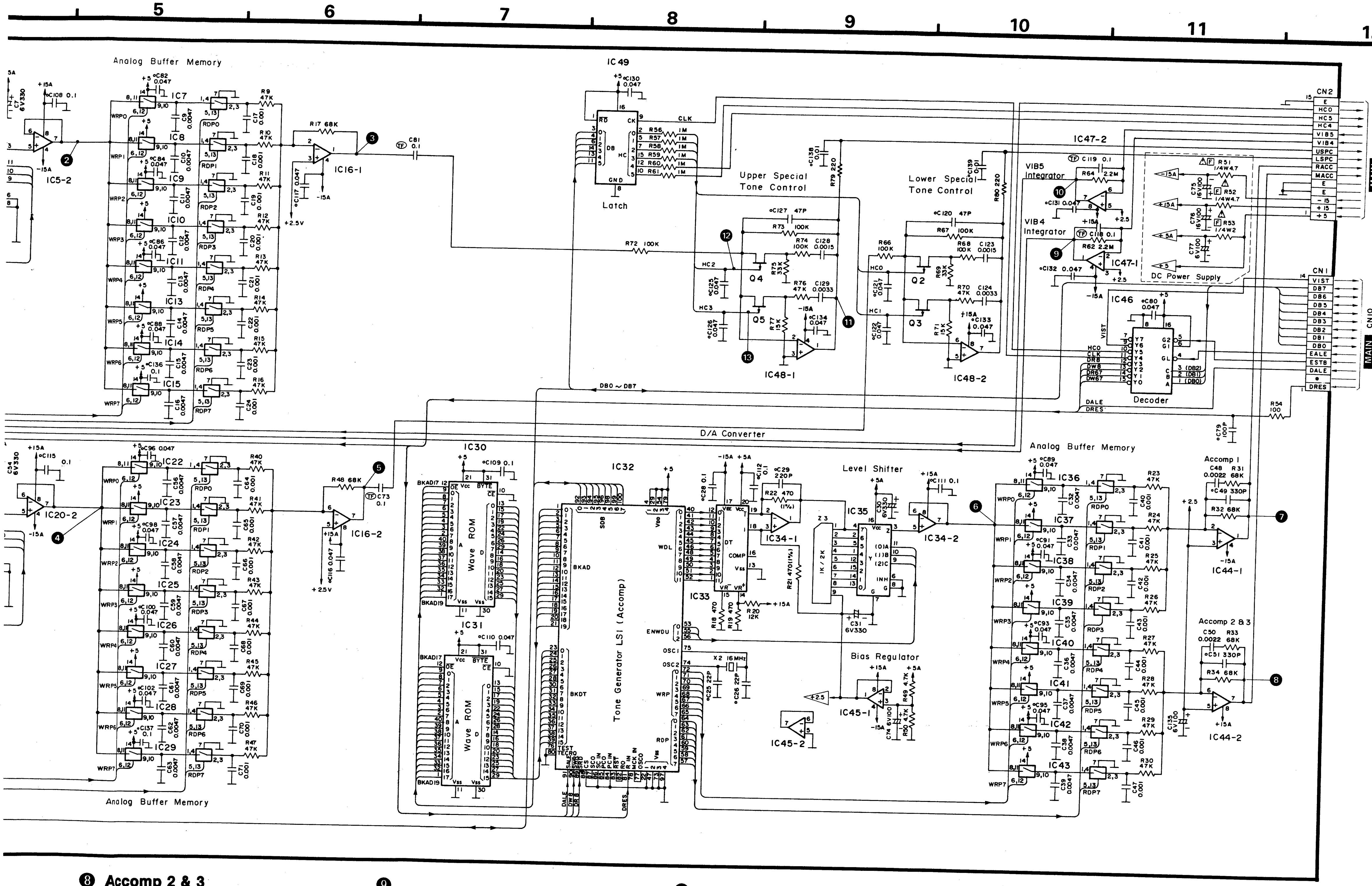


- Lower Special ....Mallet (Vibraphone)

(Sound Setting: Page 1
VARI=3 (LSPC))

⓫

AM


5
6
7
8
9
10
11
12
Analog Buffer Memory
IC5-2
IC7
IC8
IC9
IC10
IC11
IC13
IC14
IC15
IC16-1
R17 68K
C81 0.1
IC49
Latch
CLK
R56 1M
R57 1M
R58 1M
R59 1M
R60 1M
R61 1M
Upper Special Tone Control
Lower Special Tone Control
R72 100K
HC2
HC3
Q4
Q5
Q2
Q3
IC48-1
IC48-2
HC0
HC1
IC47-2
VIB5 Integrator
VIB4 Integrator
IC47-1
R64 2.2M
R62 2.2M
DC Power Supply
R51 1/4W4.7
R52 1/4W4.7
R53 1/4W2
IC46
Decoder
CN2
E
HC0
HC5
HC4
VIB5
VIB4
USPC
LSPC
RACC
MACC
E
E
-15
+15
+5
MAIN
CN12
CN1
VIST
DB7
DB6
DB5
DB4
DB3
DB2
DB1
DB0
EALE
ESTB
DALE
DRES
CN10
R54 100
DALE
DRES
DB0 ~ DB7
D/A Converter
IC20-2
IC22
IC23
IC24
IC25
IC26
IC27
IC28
IC29
IC16-2
R48 68K
C73 0.1
IC30
Wave ROM
IC31
IC32
Tone Generator LSI (Accomp)
IC33
IC34-1
IC34-2
Level Shifter
IC35
Bias Regulator
IC45-1
IC45-2
X2 16MHz
IC36
IC37
IC38
IC39
IC40
IC41
IC42
IC43
Analog Buffer Memory
Accomp 1
C48 0.0022
R31 68K
C49 330P
R32 68K
IC44-1
Accomp 2 & 3
C50 0.0022
R33 68K
C51 330P
R34 68K
IC44-2
Analog Buffer Memory

NOTES:

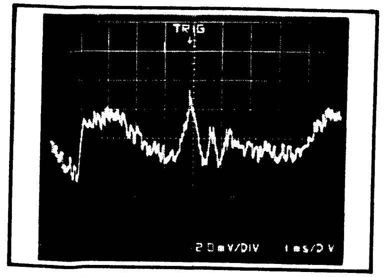
- IC'S

IC1, 30:	QSIGU3C04727
IC2, 31:	QSIGU3C04728
IC3, 18, 32:	MN6635
IC4, 19, 33:	SVIGBA9221
IC5, 20, 34:	SVIGM5238L
IC6, 21, 35:	SVIGTC4051BP
IC7~11, 13~15, 22~29, 36~43:	SVIGM74H4066
IC16, 44, 45, 47, 48:	SVIGM5218L
IC17:	QSIGU3C04729
IC46:	M74HC137P
IC49:	M74HC174P

- TRANSISTORS

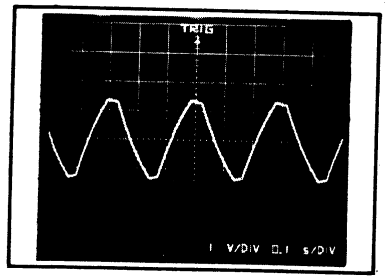
Q2~5:	2SJ105GR

⑧ Accomp 2 & 3



- Rhythm..............................Hard Rock
- Arranger..............................Accomp 2 & 3
- LK8: C Key • Start/Stop: Start

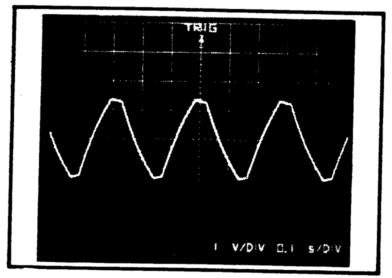
⑨



- Upper Special....................Mallet (Vibraphone)

(Sound Setting: Page 1
VARI=3 (USPC))

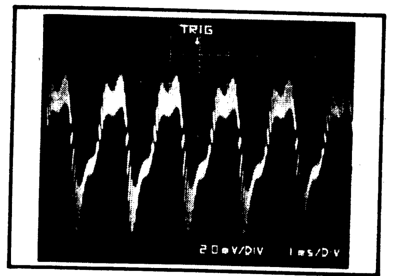
⑩



- Lower Special....................Mallet (Vibraphone)

(Sound Setting: Page 1
VARI=3 (LSPC))

⑪ USPC



- Sound Setting....................Page 5
- Part...USPC • Tone...NORM
- Upper Key............................C4
- U. Special............................Flute

⑫, ⑬

5: MANUAL PART CONDITION			
PAGE 5' / Check Point	TONE: SOFT	TONE: NORM	TONE: HARD
⑫ HC2	+5V (H)	0V (L)	+5V (H)
⑬ HC3	0V (L)	+5V (H)	+5V (H)

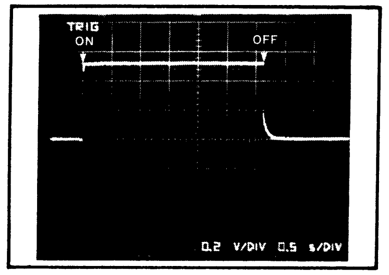
- Sound Setting....................Page 5 (MANUAL PART CONDITION)
- Part..USPC (Upper Special)

EJ EFFECT, MIXING & JACK CIRCUIT BOARD

■ Measuring Conditions

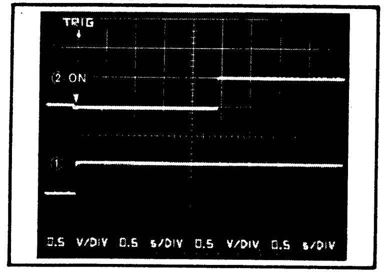
1. Set to the initial mode. (Refer to page I-3)
2. Set the all parts INITIAL TOUCH SENSE function (EFFECT MODE: Page 6) to "0". (Upper=0, Lower=0, Bass=0)
3. Change the unit setting as indicate below the pictures to confirm the waveforms.

❶ SNS



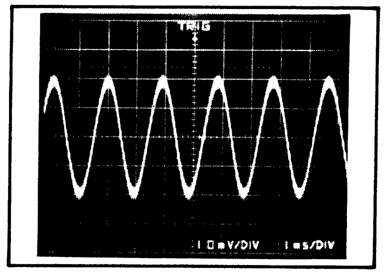
- Power SW..........................ON → OFF

❷ Muting Control, ❶ SNS



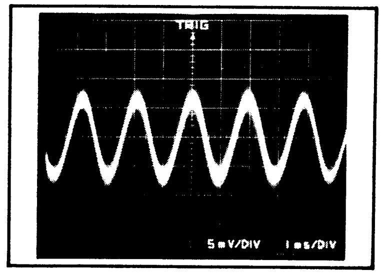
- Power SW..........................ON

❹



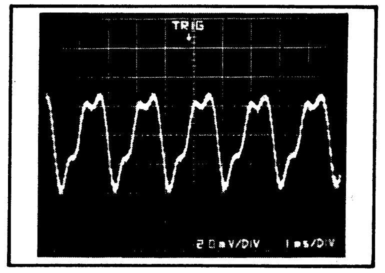
- Upper Tab..........................Flute 8'
- Upper Keyboard.................C4 Key

❺



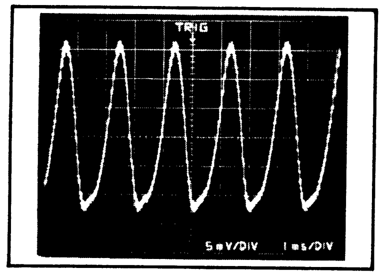
- Lower Tab ....Flute 8'
- Lower Keyboard ....C4 Key

❻



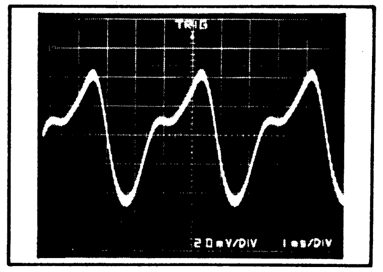
- U. Special..........................Flute
- Upper Keyboard.................C4 Key

❼



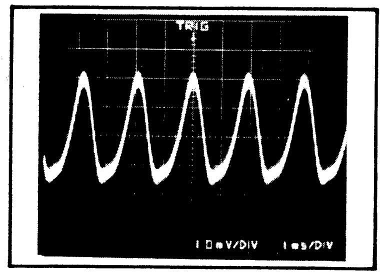
- L. Special ....Horn
- Lower Keyboard.................C4 Key

❽



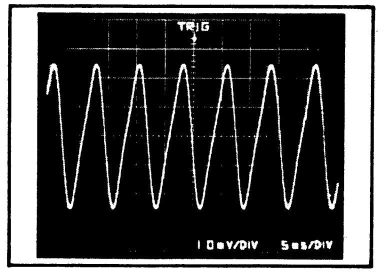
- U. Poly ....Horn
- Upper Keyboard ....C4 Key

❾



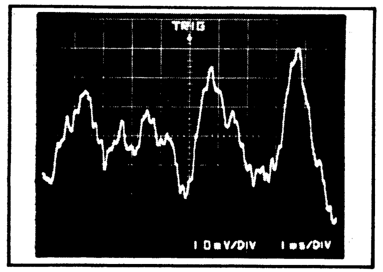
- L. Poly....................................Horn
- Lower Keyboard ....C4 Key

❿



- Bass.......................................Bass 8'
- Pedal Keyboard.................C2 Key

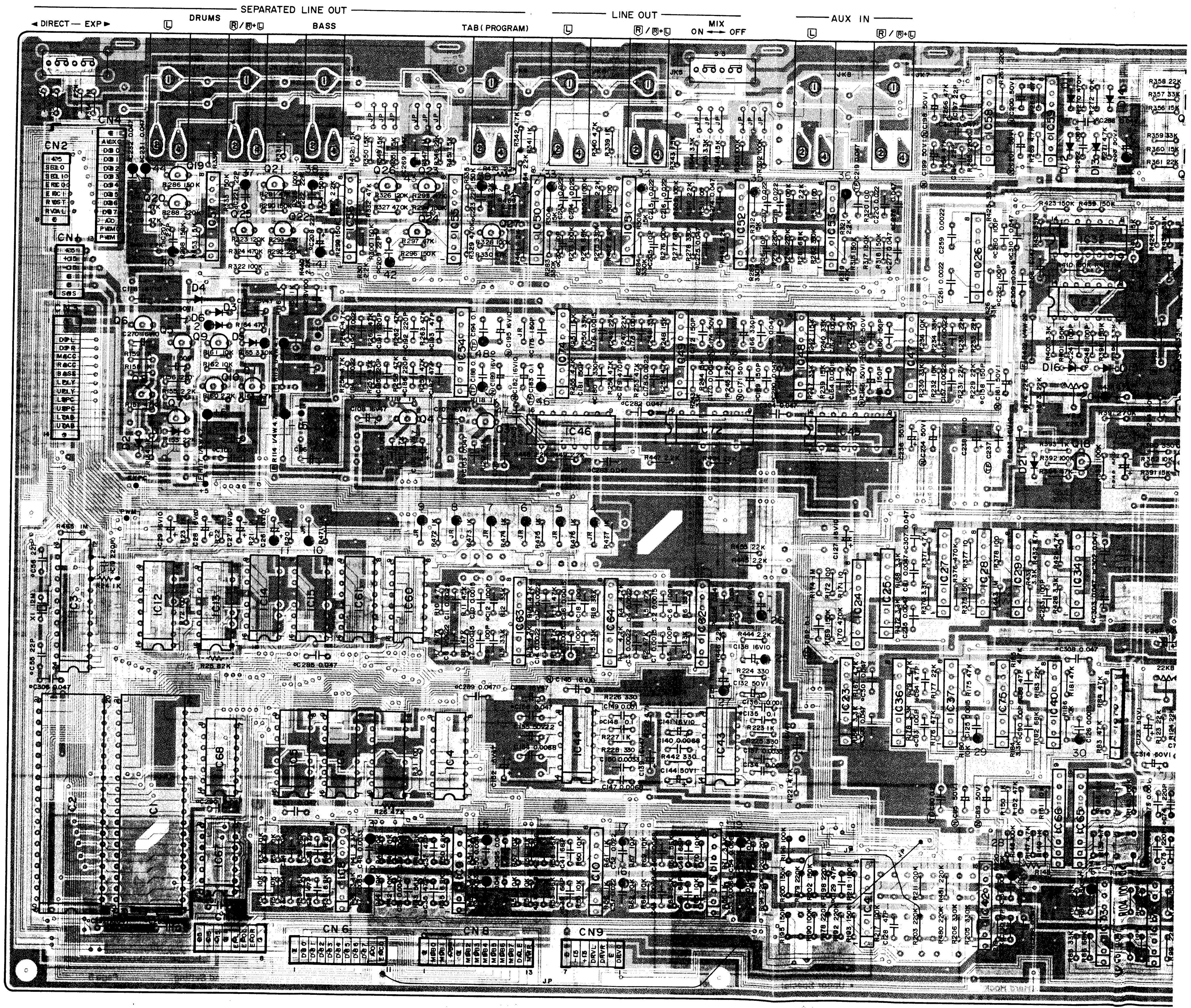
⓫



- Rhythm: Hard Rock
- Arranger: Accomp 1
- LKB: C Key • Start/Stop: Start

Circuit view on top of P.C.B.

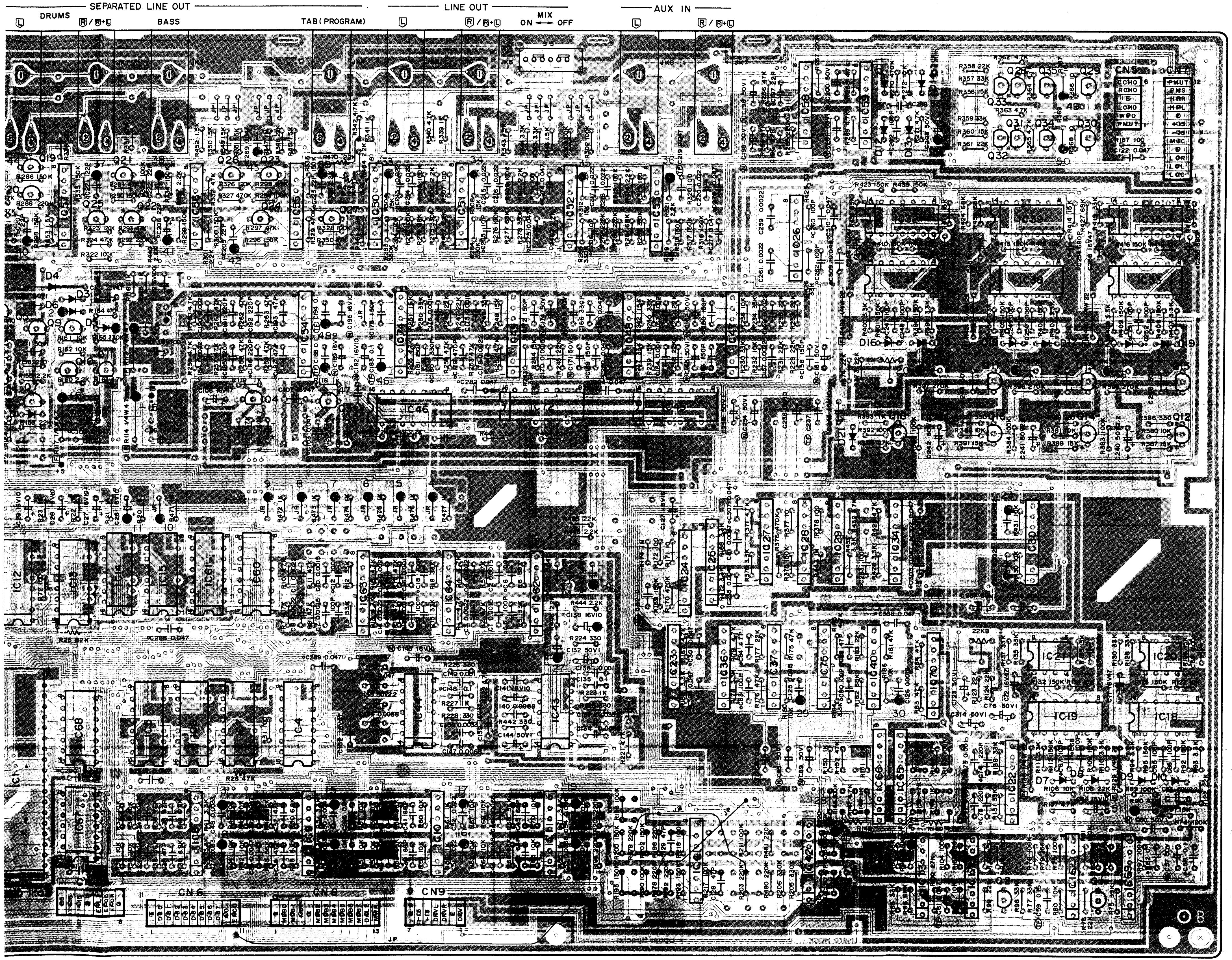
• [EZ] [MC] [XL] areas **SXPG200331**


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
SEPARATED LINE OUT
◄ DIRECT — EXP ►
Ⓛ
DRUMS
Ⓡ/Ⓡ+Ⓛ
BASS
TAB (PROGRAM)
LINE OUT
Ⓛ
Ⓡ/Ⓡ+Ⓛ
MIX
ON ◄—► OFF
AUX IN
Ⓛ
Ⓡ/Ⓡ+Ⓛ
CN2
CN4
CN6
CN8
CN9
IC46
JP

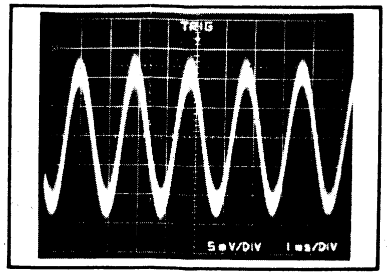
5 6 7 8 9 10 11 12 13 14

setting as indicate below the pictures to con-
'ms.

Circuit view on top of P.C.B. • [EZ] [MC] [XL] areas **SXPG200331** • Other areas **SXPG200311**

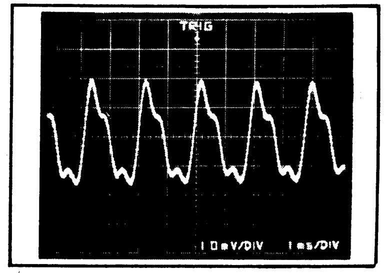

SEPARATED LINE OUT
DRUMS
BASS
TAB (PROGRAM)
LINE OUT
MIX
ON ↔ OFF
AUX IN
L
R/R+L
CN5
CN6
CN8
CN9
IC46
IC19
IC18
IC21
IC20
IC68
IC4

⑫



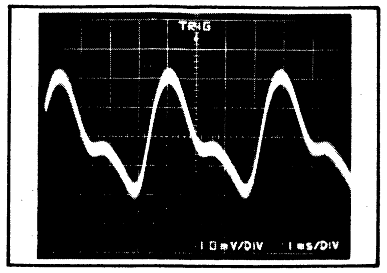
- Upper Tab............................Flute 8′
- Tremolo ....OFF
- Upper Keyboard..................C4 Key

⑬



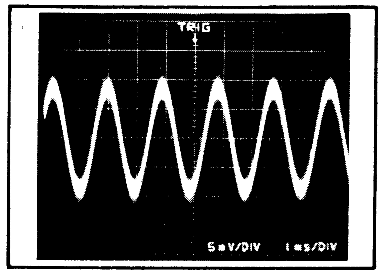
- Upper Special ....Flute
- Upper Keyboard..................C4 Key

⑭



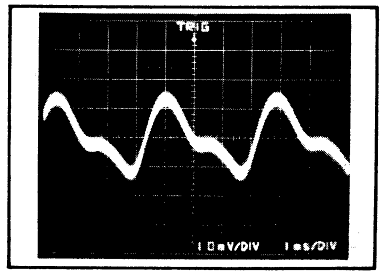
- Upper Poly...........................Horn
- Upper Keyboard..................C4 Key

⑮



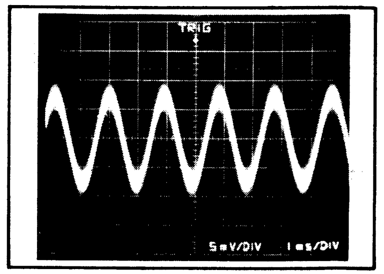
- Upper Tab............................Flute 8′
- Upper Keyboard..................C4 Key

⑯



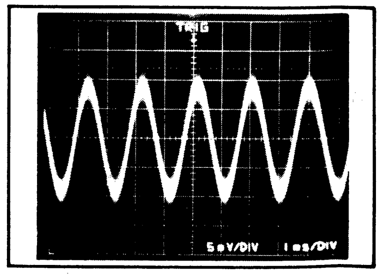
- U. Poly ....Horn
- Effect 1 ....ON
- Upper Keyboard..................C4 Key

⑰



- Upper Tab............................Flute 8′
- Tremolo ....ON
- Upper Keyboard..................C4 Key

⑱



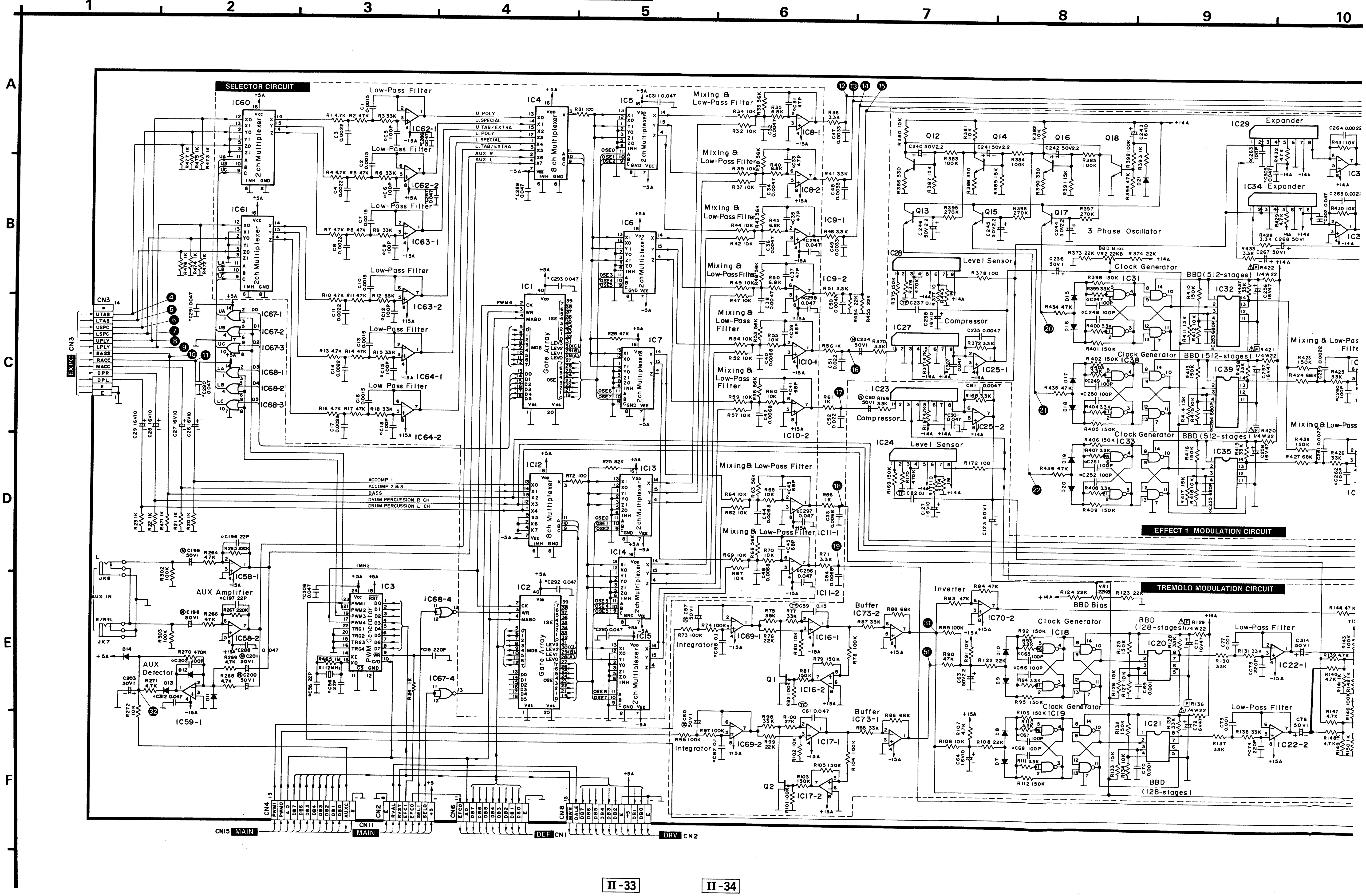
- Upper Tab............................Flute 8′
- Reverb..................................ON
- Upper Keyboard..................C4 Key

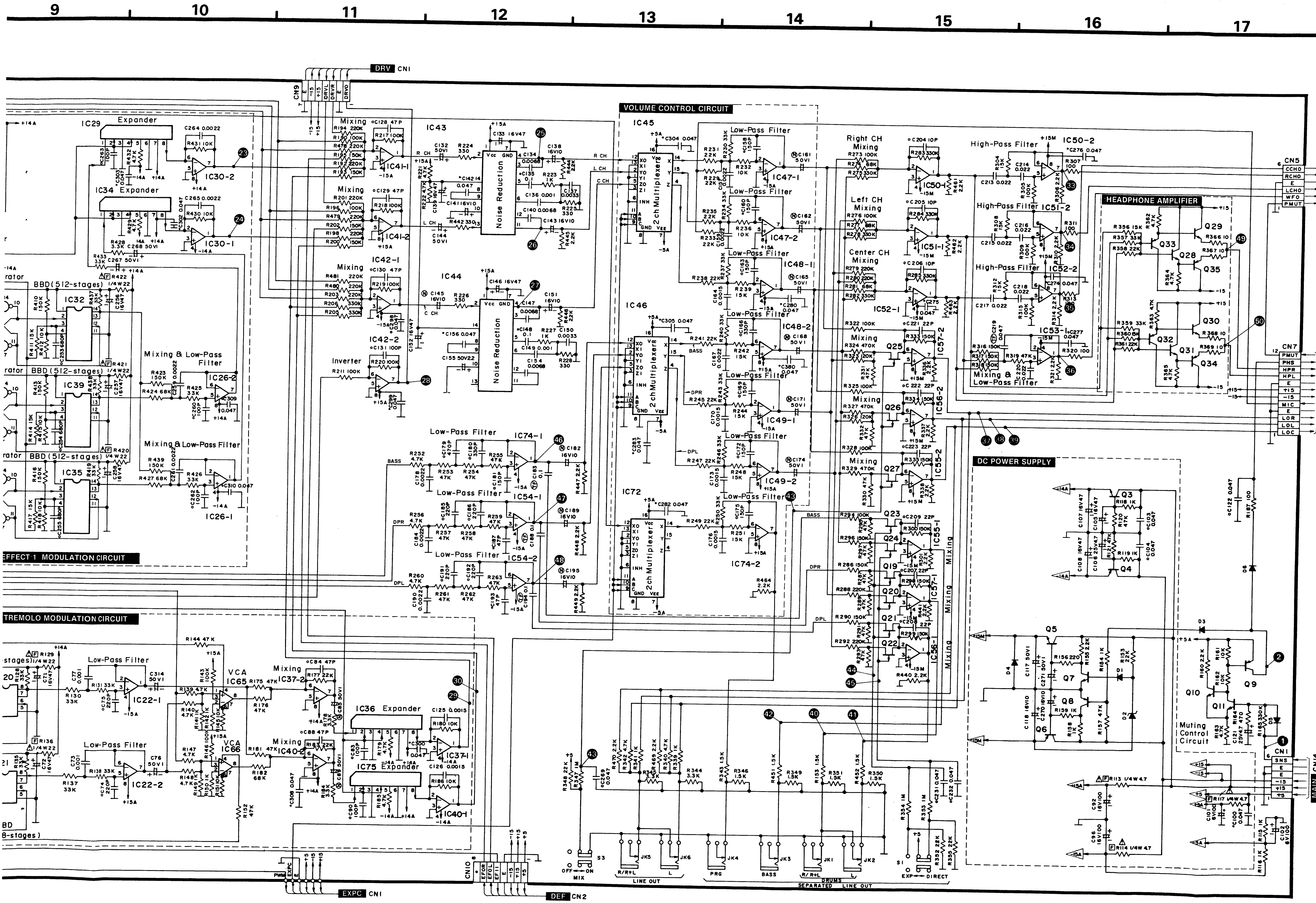
NOTES:

• IC'S	
IC1, 2:	SVIG65002018
IC3:	M66240P
IC4, 12:	SVIGTC4051BP
IC5~7, 13~15, 45, 46, 60, 61, 72:	SVIGTC4053BP
IC8~11, 16, 17, 22, 25, 26, 30, 37, 40~42, 47~57, 59, 69, 70, 73, 74:	SVIGM5218L
IC18, 19, 31, 33, 38:	SVIGMSM4011
IC20, 21:	MN3006
IC23, 27, 29, 34, 36, 75:	SVIGUPC1252H
IC24, 28:	SVIGUPC1253H
IC32, 35, 39:	MN3004
IC43, 44:	SVIGLM1894N
IC58, 62~64:	SVIGM5238L
IC65, 66:	SVIGBA6110
IC67, 68:	SVIGM74H02
• TRANSISTORS	
Q1, 2, 19~27:	2SJ105GR
Q3, 5, 7, 10, 11~18, 28, 31:	2SC2320LFG
Q4, 6, 8, 9, 32, 33:	2SA1015-GR
Q29, 30:	2SC3940AR
Q34, 35:	2SA1534AR
• DIODES	
D1, 3, 5~21:	MA165TA5
D2:	MA4062
D4:	SVDGRK14S

EJ

EFFECT, MIXING & JACK CIRCUIT DIAGRAM


SELECTOR CIRCUIT
IC60 2ch Multiplexer
IC61 2ch Multiplexer
IC67-1
IC67-2
IC67-3
IC68-1
IC68-2
IC68-3
CN3
EXPC CN3
UTAB
LTAB
USPC
LSPC
UPLY
LPLY
BASS
RACC
MACC
DPR
DPL
Low-Pass Filter
IC62-1
IC62-2
IC63-1
IC63-2
IC64-1
IC64-2
IC4 8 ch Multiplexer
U.POLY
U.SPECIAL
U.TAB/EXTRA
L.POLY
L.SPECIAL
L.TAB/EXTRA
AUX R
AUX L
IC5 2ch Multiplexer
IC6 2ch Multiplexer
IC7 2ch Multiplexer
IC1 Gate Array
Mixing & Low-Pass Filter
IC8-1
IC8-2
IC9-1
IC9-2
IC10-1
IC10-2
IC11-1
IC11-2
IC12 8ch Multiplexer
ACCOMP 1
ACCOMP 2 & 3
BASS
DRUM PERCUSSION R CH
DRUM PERCUSSION L CH
IC13 2ch Multiplexer
IC14 2ch Multiplexer
IC15 2ch Multiplexer
IC2 Gate Array
IC3 PWM Generator
1MHz
IC68-4
IC67-4
AUX Amplifier
IC58-1
IC58-2
AUX IN
JK8
JK7
L
R/R+L
AUX Detector
IC59-1
Q12
Q14
Q16
Q18
Q13
Q15
Q17
3 Phase Oscillator
IC28 Level Sensor
IC27 Compressor
IC25-1
IC23 Compressor
IC25-2
IC24 Level Sensor
Clock Generator
IC31
IC32 BBD (512-stages)
IC38
IC39 BBD (512-stages)
IC33
IC35 BBD (512-stages)
BBD Bias
IC29 Expander
IC34 Expander
Mixing & Low-Pass Filter
EFFECT 1 MODULATION CIRCUIT
TREMOLO MODULATION CIRCUIT
Inverter
IC70-2
BBD Bias
Integrator
IC69-1
IC69-2
IC16-1
IC16-2
IC17-1
IC17-2
Q1
Q2
Buffer
IC73-2
IC73-1
IC18
IC19
IC20 BBD (128-stages)
IC21 BBD (128-stages)
Low-Pass Filter
IC22-1
IC22-2
CN4
CN2
CN6
CN8
CN15 MAIN
CN11 MAIN
DEF CN1
DRV CN2


DRV CN1
CN9
VOLUME CONTROL CIRCUIT
IC29 Expander
IC34 Expander
IC30-2
IC30-1
Mixing
IC41-1
IC41-2
IC43
Noise Reduction
IC44
IC45
IC46
2ch Multiplexer
IC47-1
IC47-2
IC48-1
IC48-2
IC49-1
IC49-2
IC72
IC74-1
IC74-2
IC54-1
IC54-2
Low-Pass Filter
Right CH Mixing
Left CH Mixing
Center CH Mixing
IC50-1
IC51-1
IC52-1
High-Pass Filter
IC50-2
IC51-2
IC52-2
IC53-1
IC53-2
Mixing & Low-Pass Filter
HEADPHONE AMPLIFIER
Q28
Q29
Q30
Q31
Q32
Q33
Q34
Q35
CN5
CN2
CN7
JACK CN1
PA CN1 CN4
BBD(512-stages)
IC32
IC39
IC35
IC26-1
IC26-2
EFFECT 1 MODULATION CIRCUIT
TREMOLO MODULATION CIRCUIT
IC22-1
IC22-2
VCA
IC65
IC66
IC37-1
IC37-2
IC36 Expander
IC75 Expander
IC40-1
IC40-2
IC42-1
IC42-2
Inverter
IC55-1
IC55-2
IC56-1
IC56-2
IC57-1
IC57-2
Q19
Q20
Q21
Q22
Q23
Q24
Q25
Q26
Q27
DC POWER SUPPLY
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Muting Control Circuit
MAIN CN14
EXPC CN1
DEF CN2
CN10
S1
S3
EXP
DIRECT
OFF
ON
MIX
JK1
JK2
JK3
JK4
JK5
JK6
R/R+L
L
LINE OUT
PRG
BASS
DRUMS
SEPARATED LINE OUT
9
10
11
12
13
14
15
16
17
18
19

NOTES:

- IC'S

IC1, 2:	SVIG65002018
IC3:	M66240P
IC4, 12:	SVIGTC4051BP
IC5~7, 13~15, 45, 46, 60, 61, 72:	SVIGTC4053BP
IC8~11, 16, 17, 22, 25, 26, 30, 37, 40~42, 47~57, 59, 69, 70, 73, 74:	SVIGM5218L
IC18, 19, 31, 33, 38:	SVIGMSM4011
IC20, 21:	MN3006
IC23, 27, 29, 34, 36, 75:	SVIGUPC1252H
IC24, 28:	SVIGUPC1253H
IC32, 35, 39:	MN3004
IC43, 44:	SVIGLM1894N
IC58, 62~64:	SVIGM5238L
IC65, 66:	SVIGBA6110
IC67, 68:	SVIGM74H02

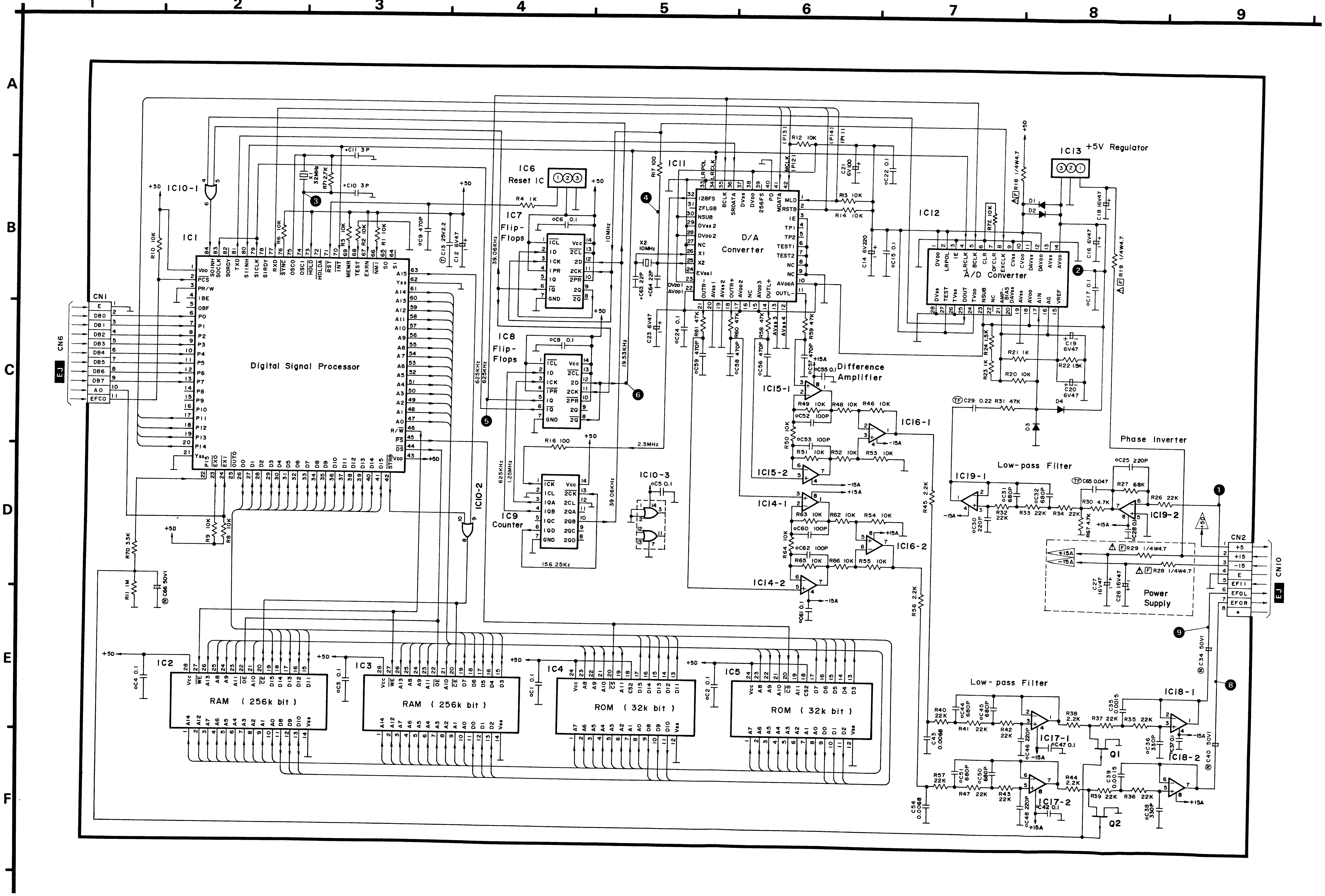
- TRANSISTORS

Q1, 2, 19~27:	2SJ105GR
Q3, 5, 7, 10, 11~18, 28, 31:	2SC2320LFG
Q4, 6, 8, 9, 32, 33:	SA1015-GR
Q29, 30:	2SC3940AR
Q34, 35:	2SA1534AR

- DIODES

D1, 3, 5~21:	MA165TA5
D2:	MA4062
D4:	SVDGRK14S

DIGITAL EFFECT CIRCUIT DIAGRAM


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
IC1
Digital Signal Processor
IC10-1
IC10-2
IC10-3
IC6
Reset IC
IC7
Flip-Flops
IC8
Flip-Flops
IC9
Counter
IC11
D/A Converter
IC12
A/D Converter
IC13 +5V Regulator
IC15-1
IC15-2
Difference Amplifier
IC16-1
IC16-2
IC14-1
IC14-2
IC19-1
IC19-2
Low-pass Filter
Phase Inverter
Power Supply
IC17-1
IC17-2
IC18-1
IC18-2
Q1
Q2
IC2
RAM (256k bit)
IC3
RAM (256k bit)
IC4
ROM (32k bit)
IC5
ROM (32k bit)
CN1
CN2
CN6
CN10
EJ
X1 32MHz
X2 10MHz
2.5MHz
39.06KHz
19.53KHz
625KHz
1.25MHz
156.25Kz
10MHz
+5D
+15A
-15A
①
②
③
④
⑤
⑥
⑧
⑨

■ Me

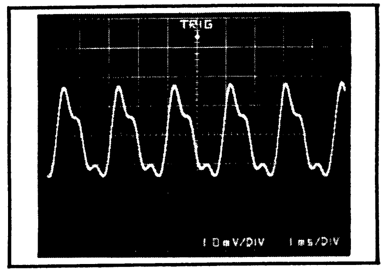
1.

2.

3.

DIGITAL EFFECT CIRCUIT BOARD

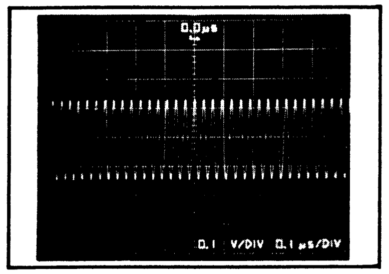
❶



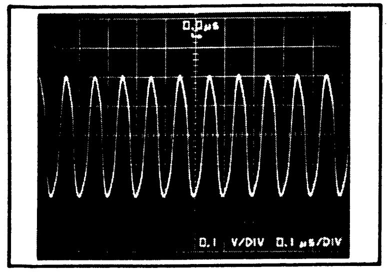
❷

+5V

❸

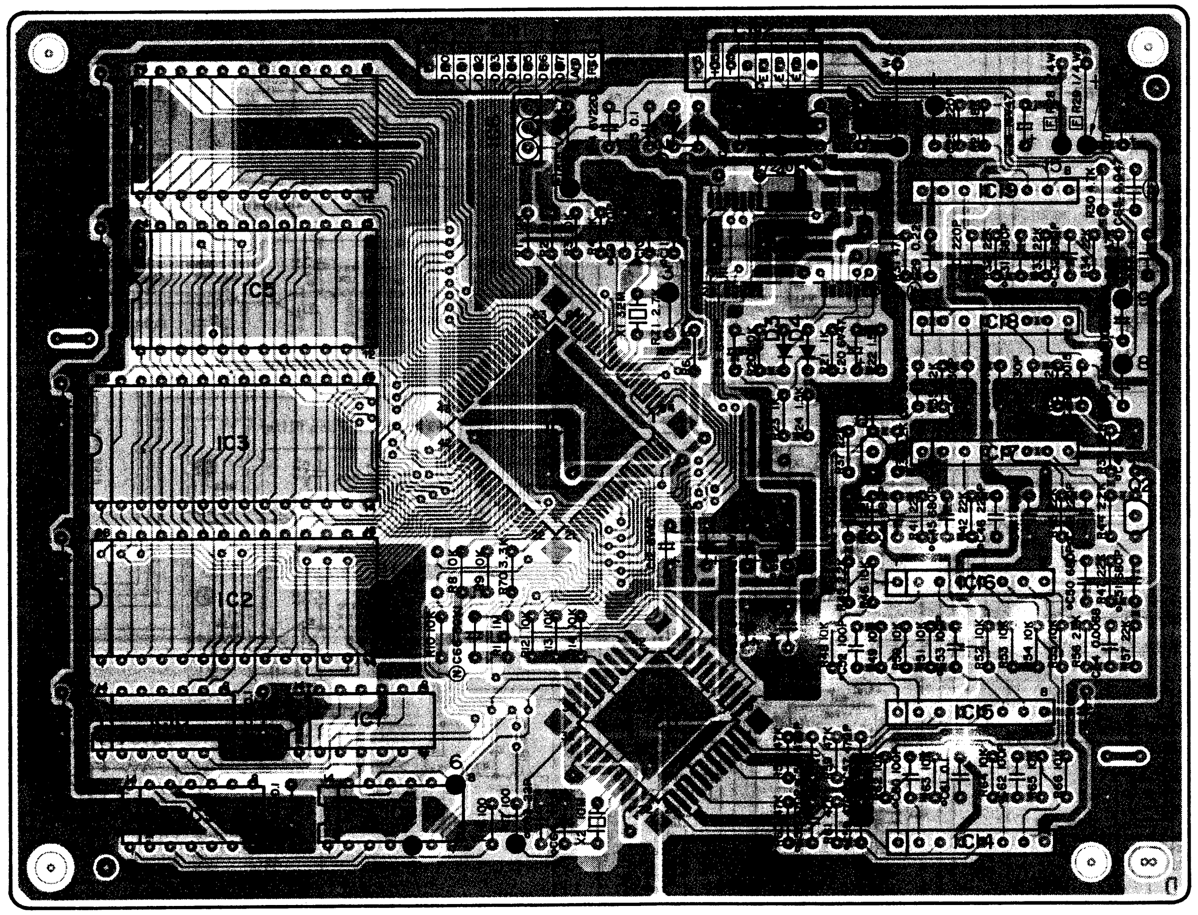


❹



■ Measuring Conditions

1. Set to the initial mode. (Refer to page I-3)
2. Set the all parts INITIAL TOUCH SENSE function (EFFECT MODE: Page 6) to "0". (Upper=0, Lower=0, Bass=0)
3. Set the unit as follows.
   - •Upper Orchestral Conductor..........Special
   - •Upper Special..................................Flute
   - •Effect 2 (Special)..............................ON
   - •Upper Keyboard ....C4 Key



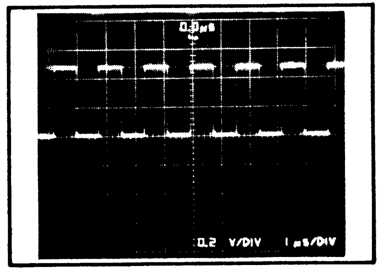
SXPG201611

Circuit view on top of P.C.B.

NOTES:

• IC'S	
IC1:	MN1911XYZ
IC2, 3:	SVIGHM65256
IC4:	QSIGADEFAX0
IC5:	QSIGADEFBX0
IC6:	MN1280R
IC7, 8:	SVIGM74H74
IC9:	M74HC393P
IC10:	SVIGM74H32
IC11:	MN6470
IC12:	MN86081
IC13:	SVIGM5278L05
IC14~16:	SVIGM5238L
IC17~19:	SVIGM5218L
• TRANSISTORS	
Q1, 2:	2SJ105GR
• DIODES	
D1~4:	MA165TA5

❺



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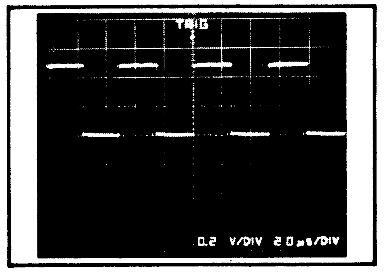

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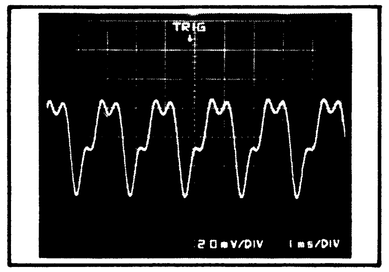

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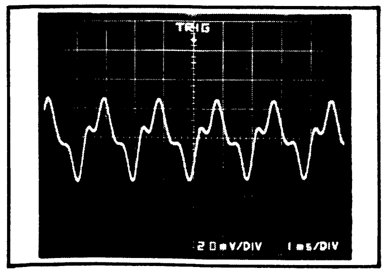
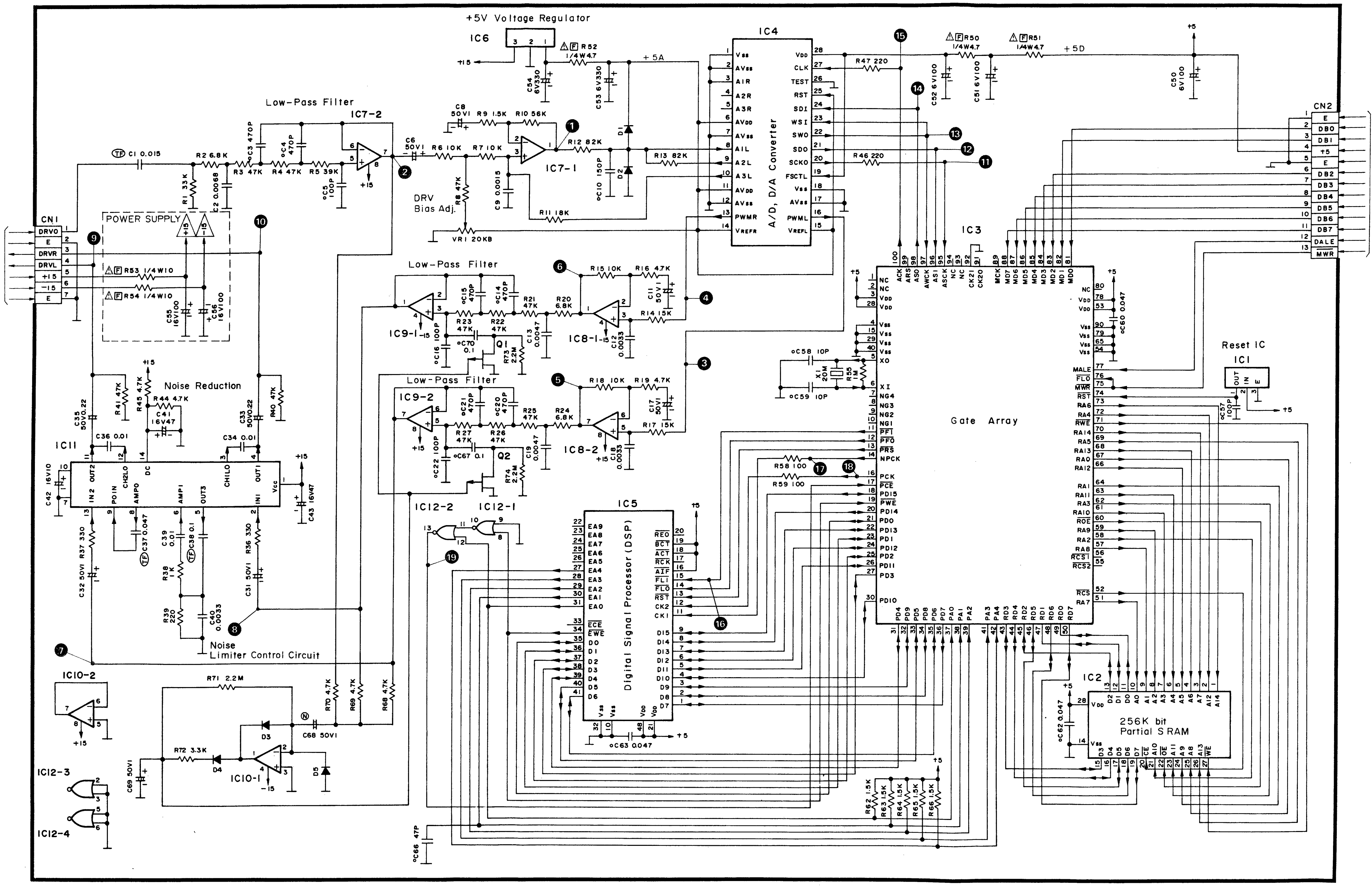


DRV

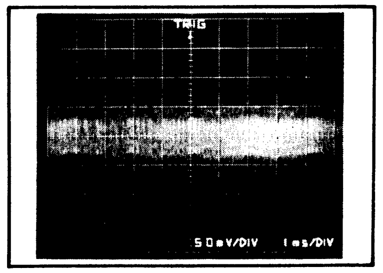
DIGITAL REVERB CIRCUIT DIAGRAM & CIRCUIT BOARD

■ Measuring Conditions

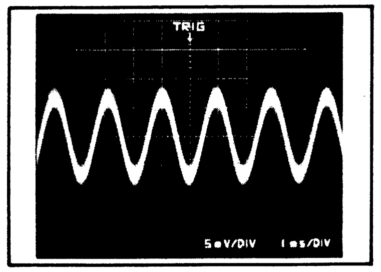
1. Set to the initial mode. (Refer to page I-3)
2. Set the all parts INITIAL TOUCH SENSE function (EFFECT MODE: Page 6) to "0". (Upper=0, Lower=0, Bass=0)
3. Set the unit as follows.
   - Upper Orchestral Conductor ....Tab & Organ
   - Upper Tab & Organ....Flute 8′
   - Reverb (Upper Tab) ....ON
   - Effect ....Page 1
   - Reverb Depth.............."8"
   - TYPE ....HALL
   - Upper Keyboard ....C4 Key


+5V Voltage Regulator
IC6
IC4
A/D, D/A Converter
Low-Pass Filter
IC7-2
IC7-1
DRV Bias Adj.
VR1 20KB
POWER SUPPLY
CN1
DRVO
E
DRVR
DRVL
+15
-15
EJ CN9
IC11
Noise Reduction
Noise Limiter Control Circuit
IC9-1
IC9-2
IC8-1
IC8-2
IC10-2
IC10-1
IC12-1
IC12-2
IC12-3
IC12-4
IC3
Gate Array
IC5
Digital Signal Processor (DSP)
IC2
256K bit Partial SRAM
Reset IC
IC1
CN2
EJ CN8
+5D
+5A

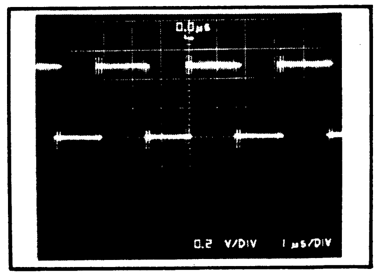
❶



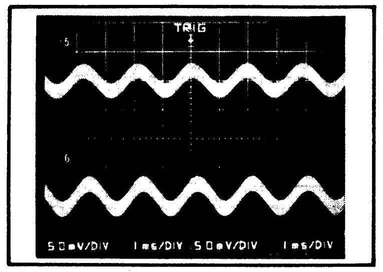
❷



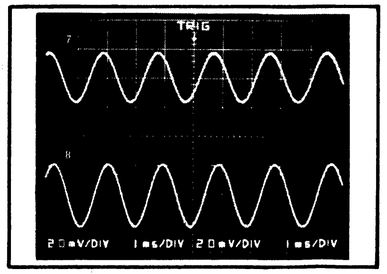
❸, ❹



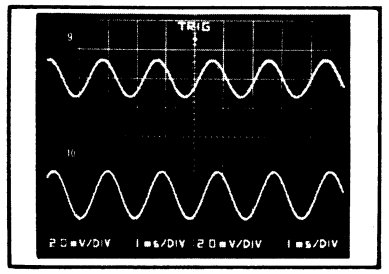
❺, ❻



❼, ❽



❾, ❿



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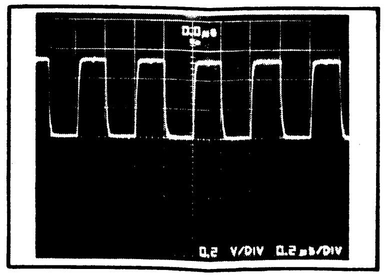
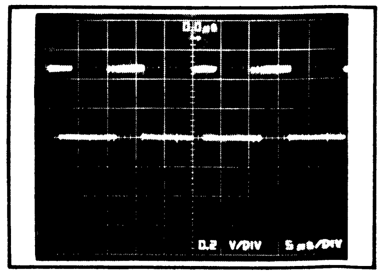
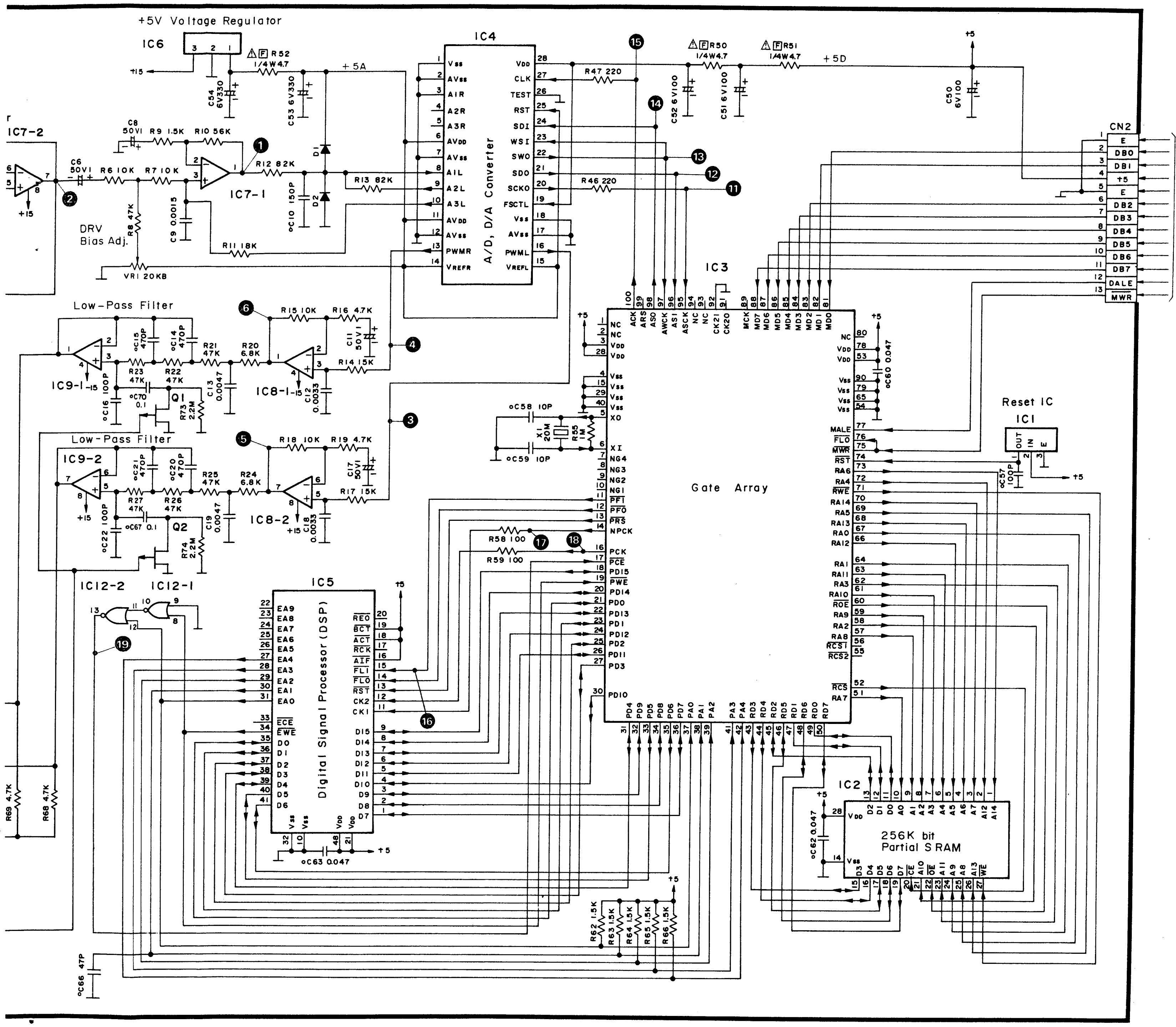


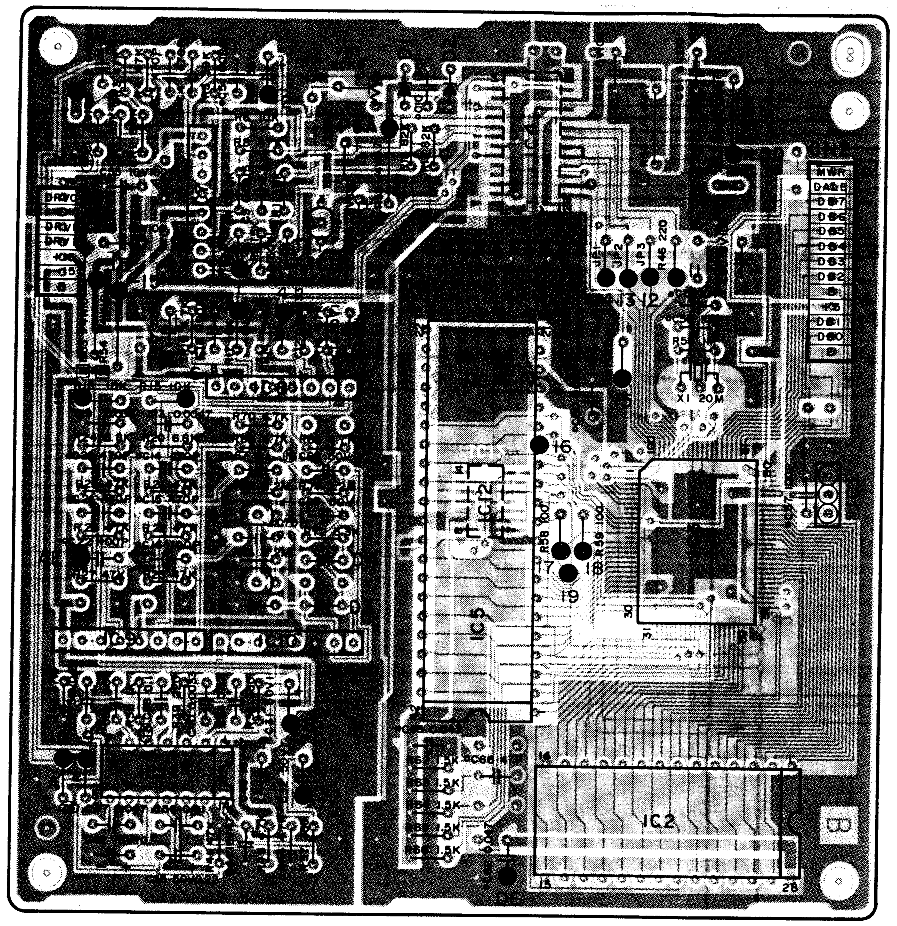
⓬



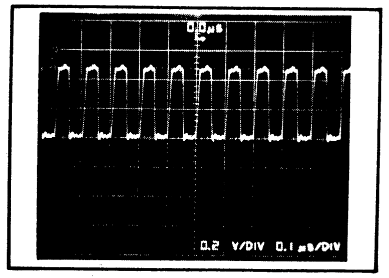
CIRCUIT BOARD


+5V Voltage Regulator
IC6
R52 1/4W4.7
+5A
C54 6V330
C53 6V330
IC4
A/D, D/A Converter
R47 220
R46 220
⑮
⑭
⑬
⑫
⑪
R50 1/4W4.7
R51 1/4W4.7
+5D
C52 6V100
C51 6V100
C50 6V100
CN2
E
DB0
DB1
+5
E
DB2
DB3
DB4
DB5
DB6
DB7
DALE
MWR
CNB
EJ
IC7-2
IC7-1
C8 50V1
R9 1.5K
R10 56K
C6 50V1
R6 10K
R7 10K
R12 82K
R13 82K
D1
D2
C10 150P
C9 0.0015
R8 47K
DRV Bias Adj.
R11 18K
VR1 20KB
①
②
Low-Pass Filter
IC9-1
IC8-1
R15 10K
R16 4.7K
R21 47K
R20 6.8K
R22 47K
R23 47K
R14 15K
C11 50V1
C13 0.0047
C12 0.0033
Q1
R73 2.2M
③
④
⑤
⑥
Low-Pass Filter
IC9-2
IC8-2
R18 10K
R19 4.7K
R25 47K
R24 6.8K
R26 47K
R27 47K
R17 15K
C17 50V1
C19 0.0047
C18 0.0033
Q2
R74 2.2M
IC3
Gate Array
C58 10P
C59 10P
X1 20M
R55 1M
Reset IC
IC1
OUT IN E
C57 100P
C60 0.047
R58 100
R59 100
⑰
⑱
⑯
IC12-2
IC12-1
⑲
IC5
Digital Signal Processor (DSP)
C63 0.047
IC2
256K bit Partial S RAM
C62 0.047
R62 1.5K
R63 1.5K
R64 1.5K
R65 1.5K
R66 1.5K
C66 47P
R69 4.7K
R68 4.7K
+5
+15
-15

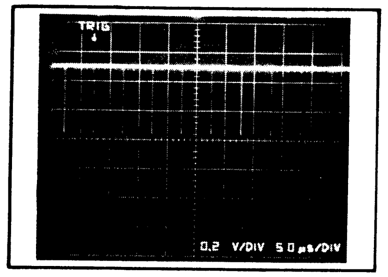
Circuit view on top of P.C.B. **SXPG146021**


IC5
IC2
X1 20M
B

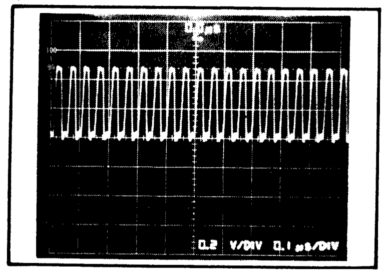
⑮



⑯



⑰



NOTES:

- IC'S

IC1:	MN1280R
IC2:	SVIGHM65256
IC3:	SVIGMB622416
IC4:	MN8305S
IC5:	SVIG87064073
IC6:	SVIGM5278L05
IC7:	SVIGM5220L
IC8~10:	SVIGM5218L
IC11:	SVIGLM1894N
IC12:	MN74HC02S

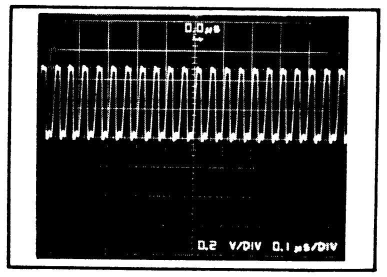
- TRANSISTORS

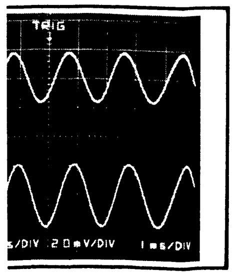
Q1, 2:	2SJ105GR

- DIODES

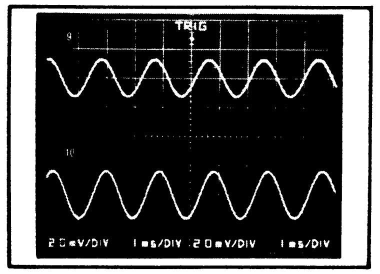
D1~5:	MA165TA5

⑱

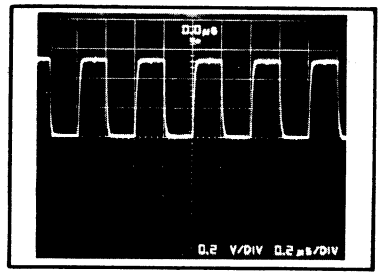




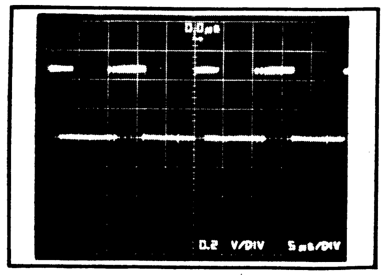
⑨, ⑩



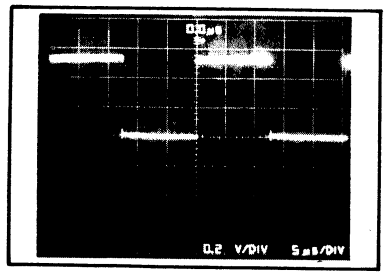
⑪



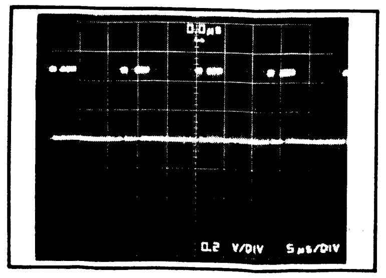
⑫



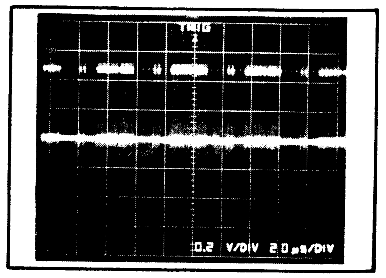
⑬



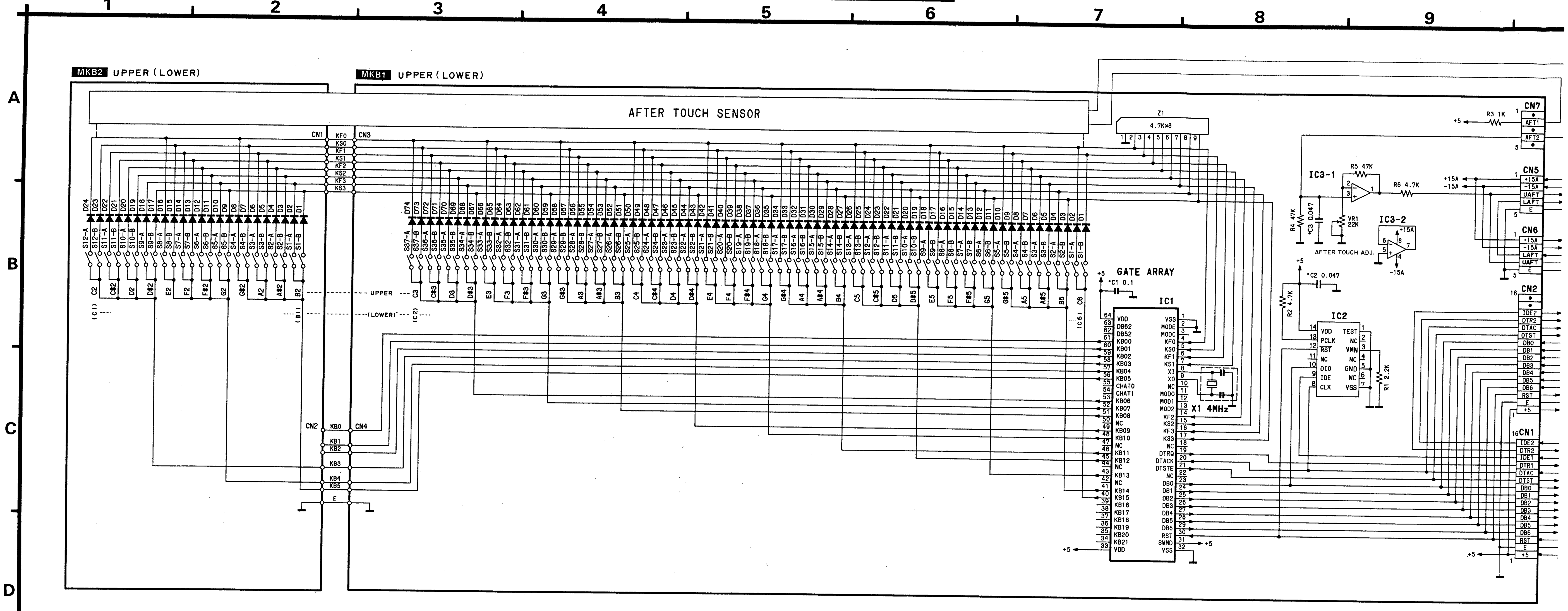
⑭



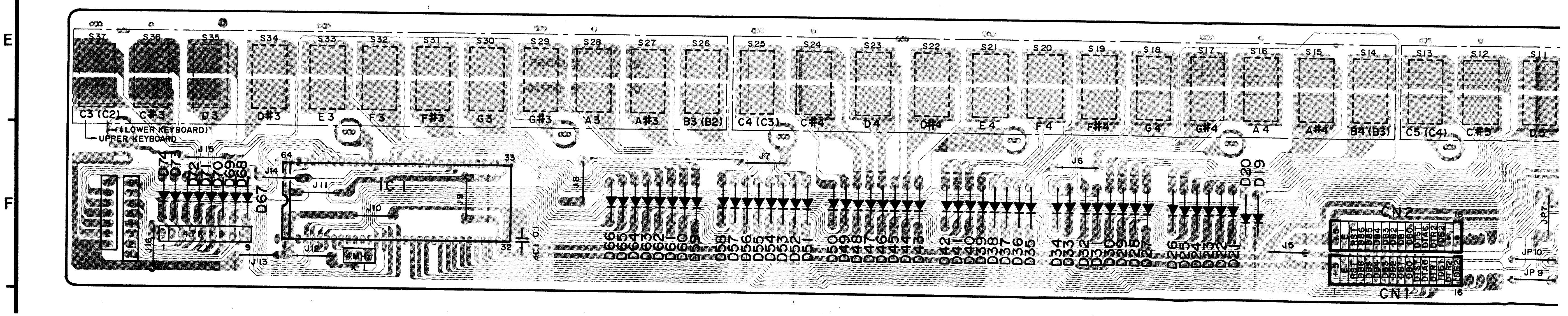
⑲



MANUAL KEYBOARD CIRCUIT DIAGRAM & CIRCUIT BOARD

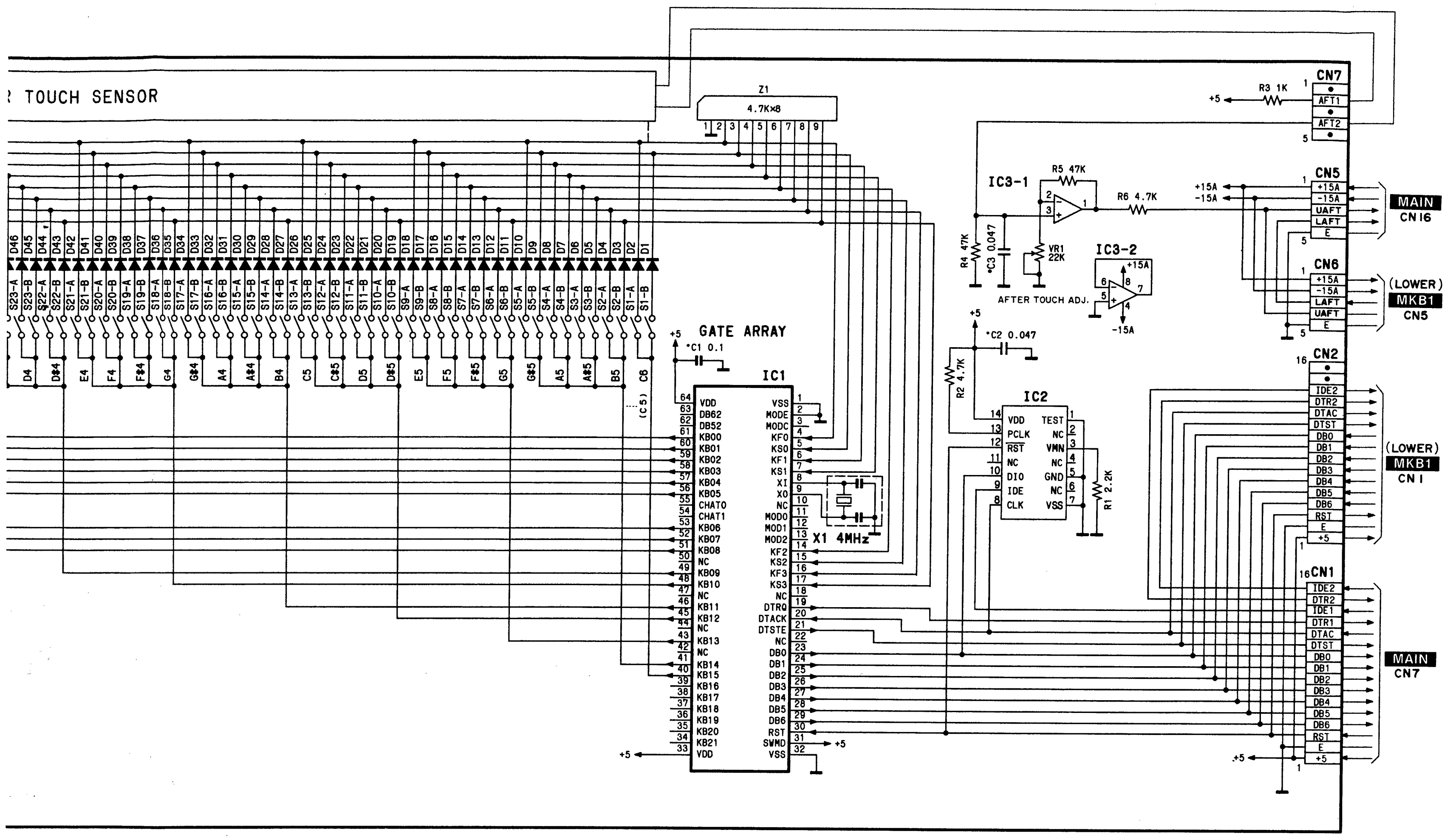

1
2
3
4
5
6
7
8
9
A
B
C
D
MKB2 UPPER (LOWER)
MKB1 UPPER (LOWER)
AFTER TOUCH SENSOR
CN1
CN2
CN3
CN4
KF0
KS0
KF1
KS1
KF2
KS2
KF3
KS3
KB0
KB1
KB2
KB3
KB4
KB5
E
UPPER
(LOWER)
Z1
4.7K×8
GATE ARRAY
IC1
+5
C1 0.1
X1 4MHz
IC2
IC3-1
IC3-2
R5 47K
R6 4.7K
R4 47K
C3 0.047
VR1 22K
AFTER TOUCH ADJ.
R3 1K
R2 4.7K
C2 0.047
R1 2.2K
+15A
-15A
CN7
CN5
CN6
CN2
CN1
AFT1
AFT2
UAFT
LAFT
IDE2
DTR2
DTAC
DTST
DB0
DB1
DB2
DB3
DB4
DB5
DB6
RST
IDE1
DTR1

MKB1


E
F
S37
S36
S35
S34
S33
S32
S31
S30
S29
S28
S27
S26
S25
S24
S23
S22
S21
S20
S19
S18
S17
S16
S15
S14
S13
S12
S11
C3 (C2)
C#3
D3
D#3
E3
F3
F#3
G3
G#3
A3
A#3
B3 (B2)
C4 (C3)
C#4
D4
D#4
E4
F4
F#4
G4
G#4
A4
A#4
B4 (B3)
C5 (C4)
C#5
D5
←(LOWER KEYBOARD)
←UPPER KEYBOARD
IC1
X1 4MHz
CN2
CN1
JP10
JP9

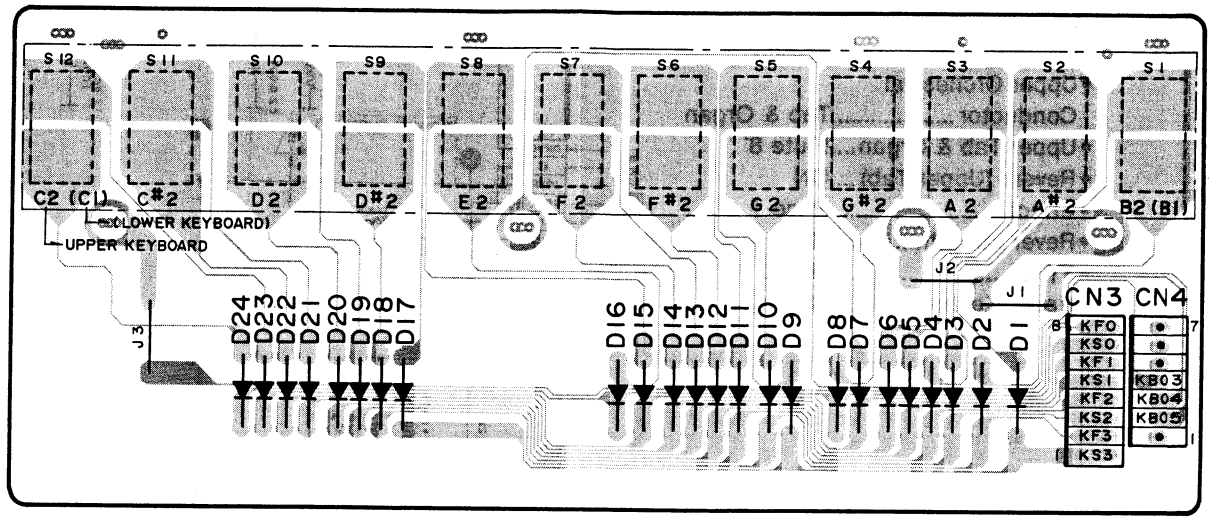
M & CIRCUIT BOARD

5 6 7 8 9 10 11 12 13 14


TOUCH SENSOR
Z1
4.7K×8
GATE ARRAY
IC1
+5
C1 0.1
VDD
DB62
DB52
KB00
KB01
KB02
KB03
KB04
KB05
CHAT0
CHAT1
KB06
KB07
KB08
KB09
KB10
KB11
KB12
KB13
KB14
KB15
KB16
KB17
KB18
KB19
KB20
KB21
VSS
MODE
MODC
KF0
KS0
KF1
KS1
X1
X0
MOD0
MOD1
MOD2
KF2
KS2
KF3
KS3
DTR0
DTACK
DTSTE
DB0
DB1
DB2
DB3
DB4
DB5
DB6
RST
SWMD
X1 4MHz
IC2
VDD
PCLK
RST
DIO
IDE
CLK
TEST
VMN
GND
C2 0.047
R2 4.7K
R1 2.2K
IC3-1
R5 47K
R6 4.7K
R4 47K
C3 0.047
VR1 22K
IC3-2
AFTER TOUCH ADJ.
+15A
-15A
R3 1K
CN7
AFT1
AFT2
CN5
UAFT
LAFT
MAIN
CN16
CN6
(LOWER)
MKB1
CN5
CN2
IDE2
DTR2
DTAC
DTST
CN1
IDE1
DTR1
MKB1
CN1
MAIN
CN7
S1-A
S1-B
D1
D46
C6
(C5)
B5
A#5
A5
G#5
G5
F#5
F5
E5
D#5
D5
C#5
C5
B4
A#4
A4
G#4
G4
F#4
F4
E4
D#4
D4

MKB2

SXPG201011


S12
S11
S10
S9
S8
S7
S6
S5
S4
S3
S2
S1
C2 (C1)
C#2
D2
D#2
E2
F2
F#2
G2
G#2
A2
A#2
B2 (B1)
LOWER KEYBOARD
UPPER KEYBOARD
J1
J2
J3
D1
D24
CN3
CN4
KF0
KS0
KF1
KS1
KF2
KS2
KF3
KS3
KB03
KB04
KB05

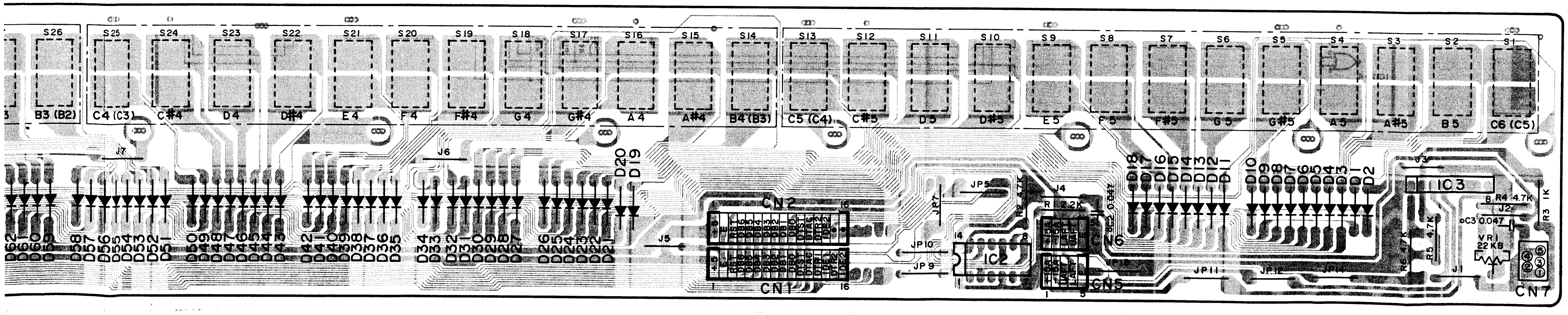
MKB2

NOTES:

- DIODES

  D1~24: MA162A

SXPG200911


S26
S25
S24
S23
S22
S21
S20
S19
S18
S17
S16
S15
S14
S13
S12
S11
S10
S9
S8
S7
S6
S5
S4
S3
S2
S1
B3 (B2)
C4 (C3)
C#4
D4
D#4
E4
F4
F#4
G4
G#4
A4
A#4
B4 (B3)
C5 (C4)
C#5
D5
D#5
E5
F5
F#5
G5
G#5
A5
A#5
B5
C6 (C5)
J5
J6
J7
CN2
CN1
JP5
JP7
JP9
JP10
JP11
JP12
JP14
IC2
IC3
CN6
CN5
CN7
R4 4.7K
C3 0.047
VR1 22KB
R5 4.7K
R6 47K
R3 1K
J1
J2

MKB1

NOTES:

- IC'S

  IC1: MN50020PGV

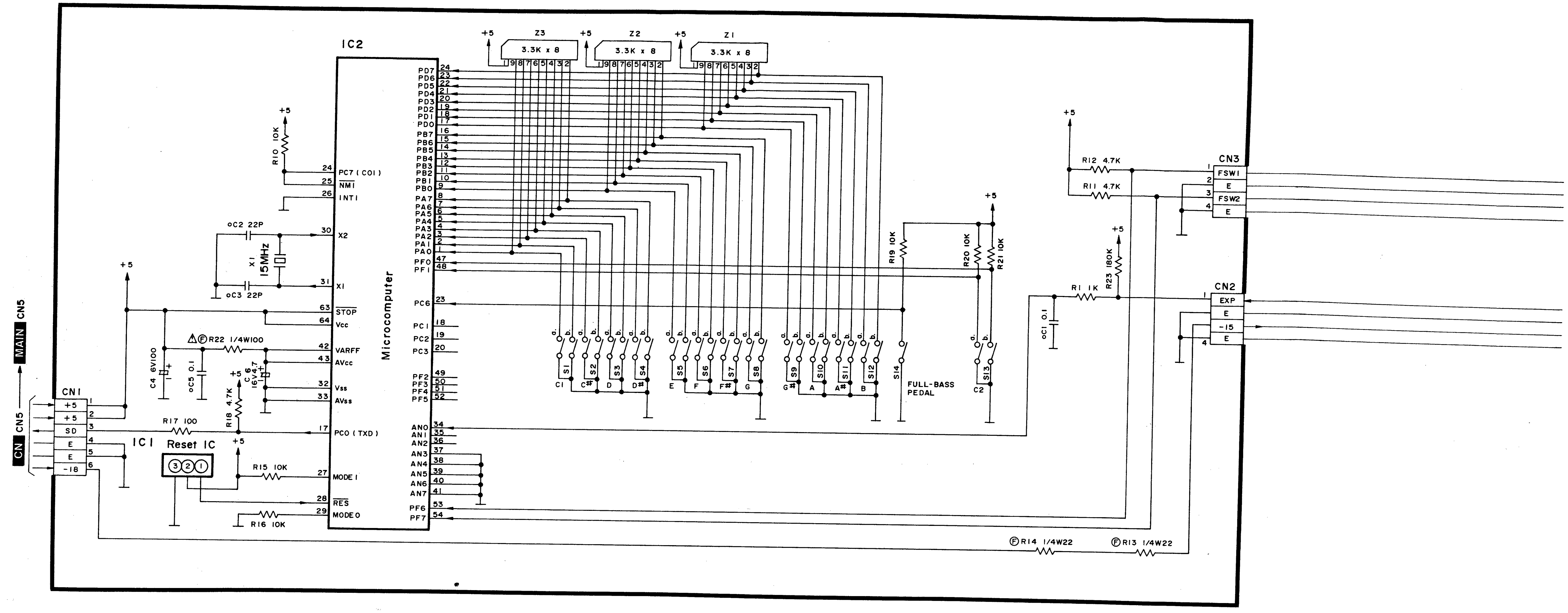
  IC2: MN1231

  IC3: SVIGM5218L

- DIODES

  D1~74: MA162A

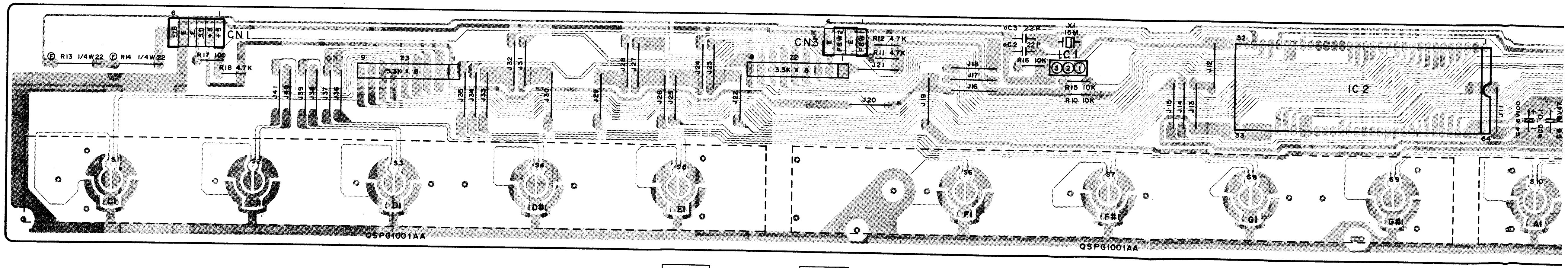
PKB PEDAL KEYBOARD CIRCUIT DIAGRAM


IC2
Microcomputer
Z3 3.3K x 8
Z2 3.3K x 8
Z1 3.3K x 8
+5
PD7 PD6 PD5 PD4 PD3 PD2 PD1 PD0
PB7 PB6 PB5 PB4 PB3 PB2 PB1 PB0
PA7 PA6 PA5 PA4 PA3 PA2 PA1 PA0
PF0 PF1
PC7 (CO1)
NMI
INT1
X2
X1
STOP
Vcc
VARFF
AVcc
Vss
AVss
PC0 (TXD)
MODE 1
RES
MODE 0
PC6
PC1 PC2 PC3
PF2 PF3 PF4 PF5
AN0 AN1 AN2 AN3 AN4 AN5 AN6 AN7
PF6 PF7
R10 10K
oC2 22P
X1 15MHz
oC3 22P
C4 6V100
oC5 0.1
C6 16V4.7
R22 1/4W100
R18 4.7K
R17 100
IC1 Reset IC
R15 10K
R16 10K
CN1
+5 +5 SD E E -18
MAIN CN5
CN CN5
S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S13 S14
C1 C# D D# E F F# G G# A A# B C2
FULL-BASS PEDAL
R19 10K
R20 10K
R21 10K
R23 180K
R1 1K
oC1 0.1
R12 4.7K
R11 4.7K
CN3
FSW1 E FSW2 E
CN2
EXP E -15 E
R14 1/4W22
R13 1/4W22

NOTES:
- IC'S

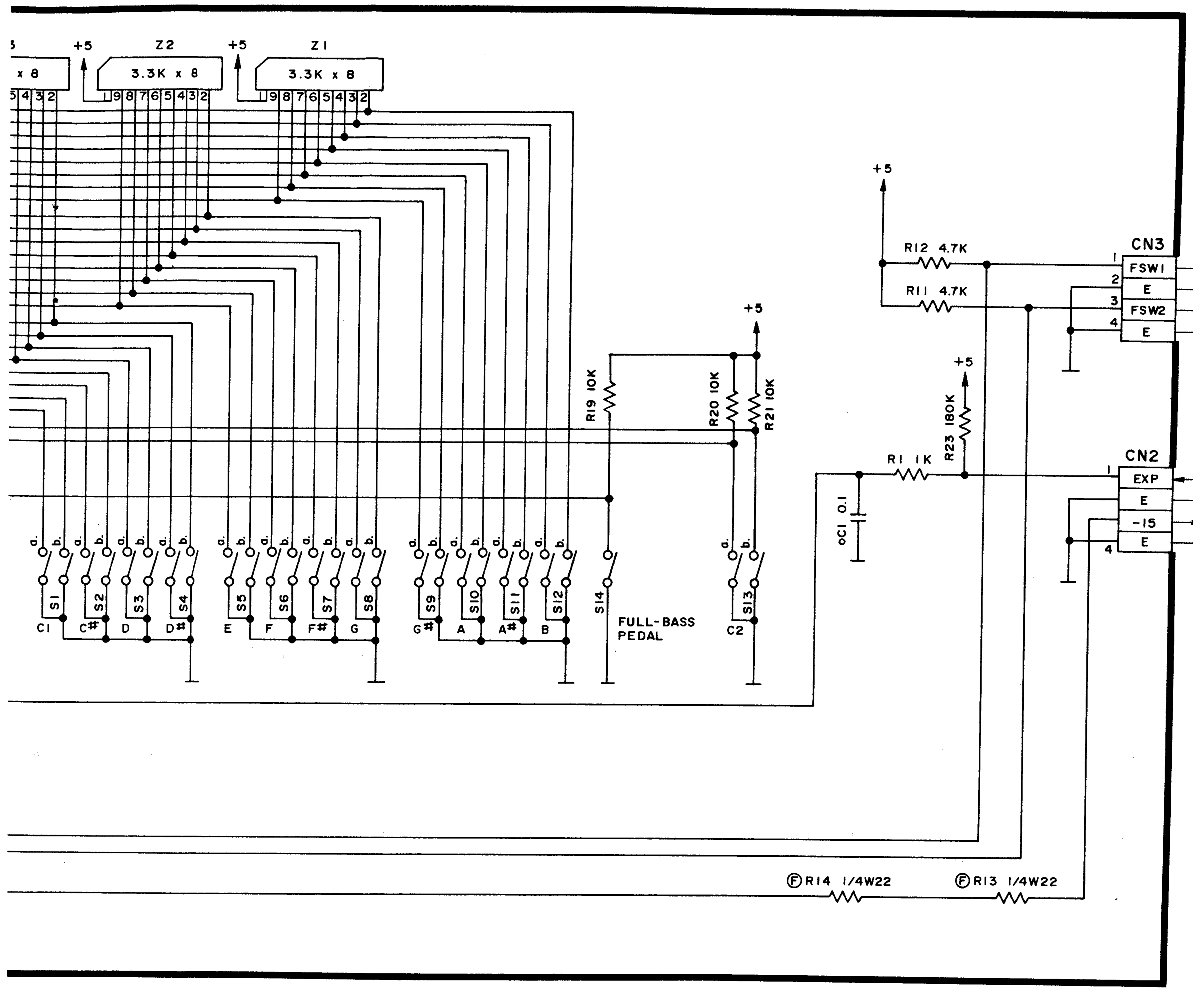
IC1:	MN1280R
IC2:	D78C11AWF03

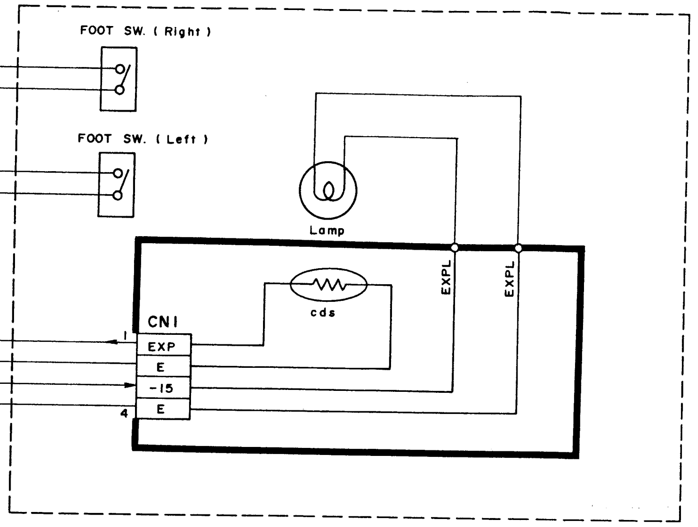
PKB PEDAL KEYBOARD CIRCUIT BOARD


CN1
R13 1/4W22
R14 1/4W22
R17 100
R18 4.7K
Z3 3.3K x 8
Z2 3.3K x 8
CN3
FSW2
FSW1
R12 4.7K
R11 4.7K
oC3 22P
oC2 22P
X1 15M
R16 10K
IC1
R15 10K
R10 10K
IC 2
C4 6V100
S1 S2 S3 S4 S5 S6 S7 S8 S9 S10
C1 C#1 D1 D#1 E1 F1 F#1 G1 G#1 A1
QSPG1001AA

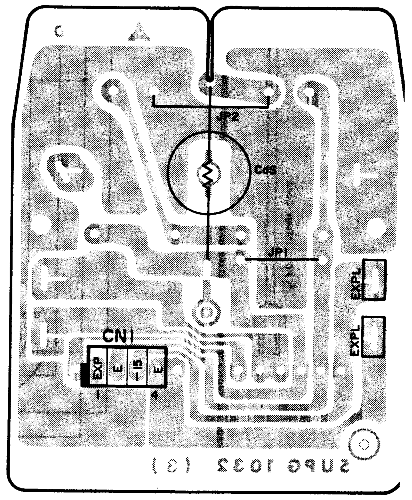
AM

EXP EXPRESSION CIRCUIT


+5
Z2
3.3K x 8
Z1
3.3K x 8
R12 4.7K
R11 4.7K
CN3
FSW1
E
FSW2
E
R19 10K
R20 10K
R21 10K
R23 180K
R1 1K
C1 0.1
CN2
EXP
E
-15
E
S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S14 S13
C1 C# D D# E F F# G G# A A# B C2
FULL-BASS PEDAL
Ⓕ R14 1/4W22
Ⓕ R13 1/4W22


FOOT SW. (Right)
FOOT SW. (Left)
Lamp
cds
EXPL
EXPL
CN1
EXP
E
-15
E

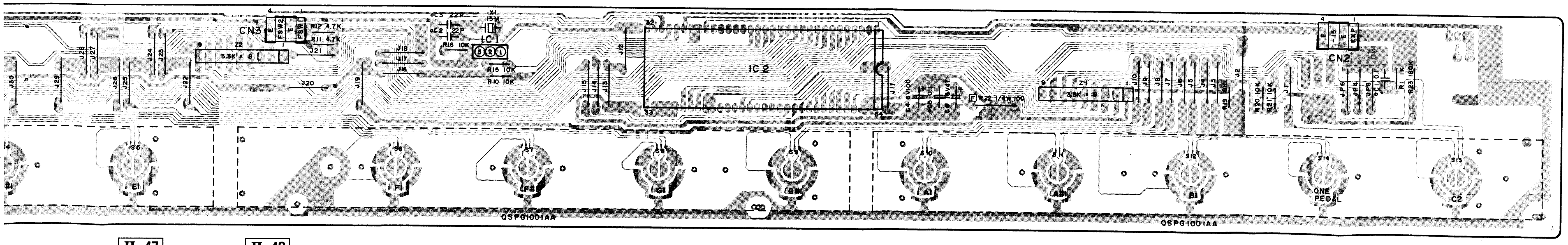
SXPG103211

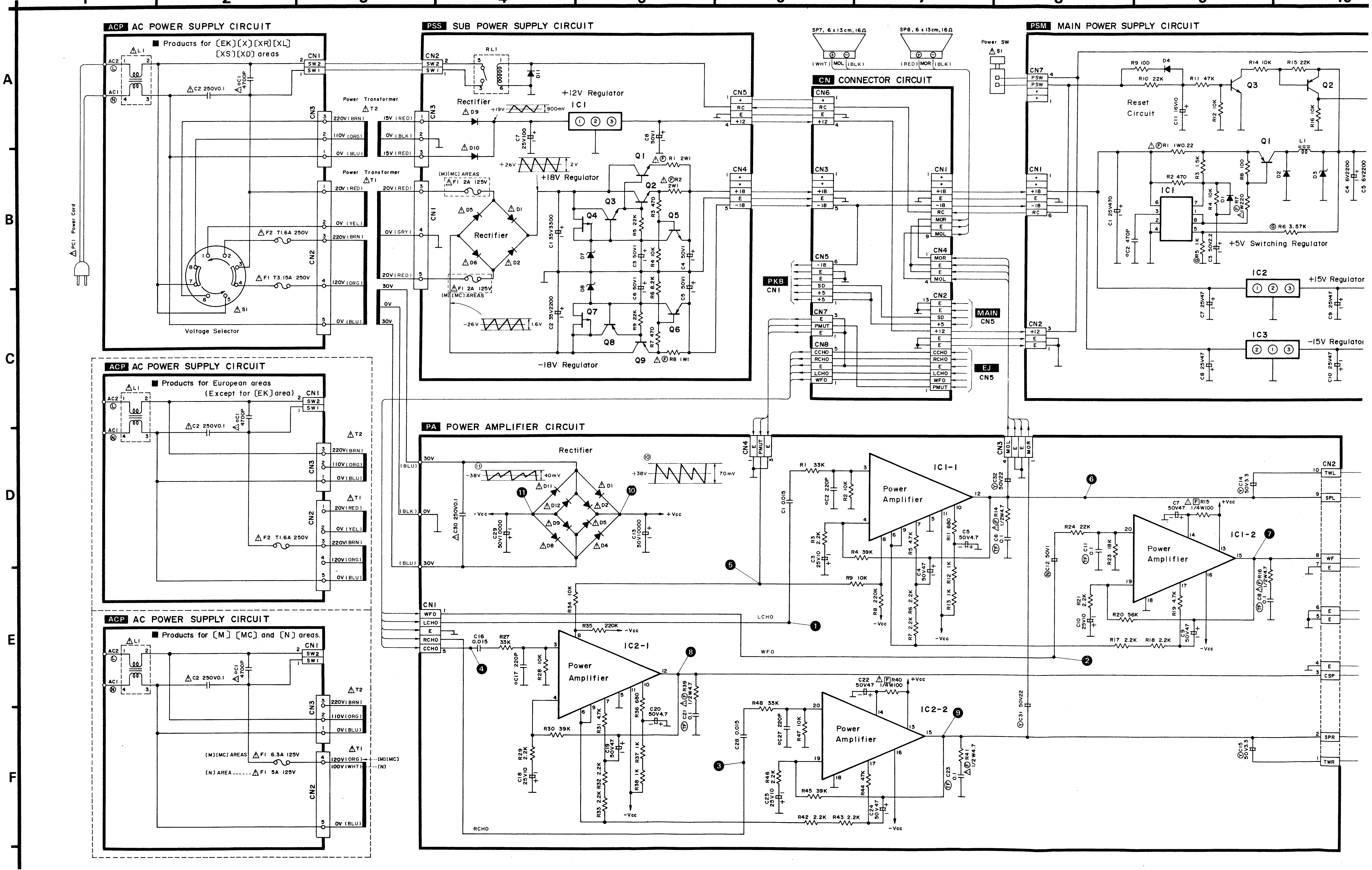

JP2
cds
JP1
CN1
EXP
E
-15
E
EXPL
EXPL
SUPG 1032 (3)

NOTES:
- IC'S
  - IC1: MN1280R
  - IC2: D78C11AWF03

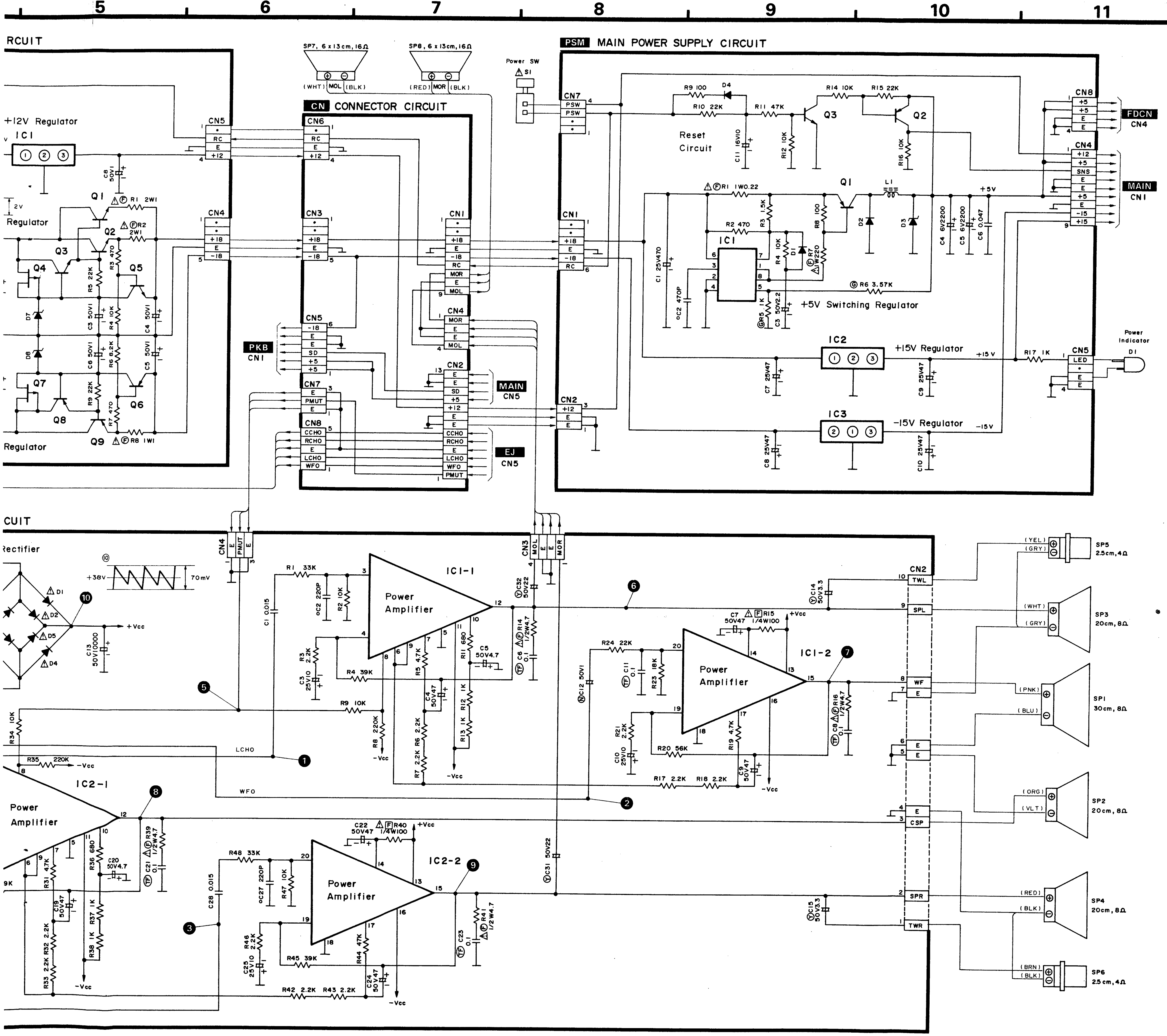
ARD

SXPG201211


CN3
Z2
3.3K x 8
IC1
IC 2
Z1
3.3K x 8
CN2
QSPG1001AA
QSPG1001AA
E1
F1
F#1
G1
G#1
A1
A#1
B1
ONE PEDAL
C2


1 2 3 4 5 6 7 8 9 10
A B C D E F
ACP AC POWER SUPPLY CIRCUIT
■ Products for [EK][X][XR][XL] [XS][XD] areas
ΔL1
ΔC1 4700P
ΔC2 250V0.1
CN1 SW2 SW1
CN3 220V(BRN) 110V(ORG) 0V(BLU)
Power Transformer ΔT2
Power Transformer ΔT1
CN2 20V(RED) 0V(YEL) 220V(BRN) 120V(ORG) 0V(BLU)
ΔF2 T1.6A 250V
ΔF1 T3.15A 250V
ΔS1
Voltage Selector
ΔPC1 Power Cord
ACP AC POWER SUPPLY CIRCUIT
■ Products for European areas (Except for [EK] area)
ACP AC POWER SUPPLY CIRCUIT
■ Products for [M] [MC] and [N] areas.
[M][MC] AREAS ΔF1 6.3A 125V
[N] AREA ΔF1 5A 125V
120V(ORG) 100V(WHT)
PSS SUB POWER SUPPLY CIRCUIT
RL1
Rectifier
ΔD9 ΔD10
+12V Regulator
IC1
+18V Regulator
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9
ΔF R1 2W1
ΔF R2 2W1
ΔF R8 1W1
[M][MC] AREAS ΔF1 2A 125V
Rectifier
ΔD1 ΔD2 ΔD5 ΔD6
-18V Regulator
15V(RED) 0V(BLK) 15V(RED) 20V(RED) 0V(GRY) 20V(RED)
30V 0V 30V
SP7, 6×13cm, 16Ω (WHT) MOL (BLK)
SP8, 6×13cm, 16Ω (RED) MOR (BLK)
Power SW ΔS1
CN CONNECTOR CIRCUIT
CN5 CN6 CN3 CN4 CN7 CN8 CN1 CN2
RC E +12 +18 -18 MOR MOL SD +5 PMUT CCHO RCHO LCHO WFO
PKB CN1
MAIN CN5
EJ CN5
PSM MAIN POWER SUPPLY CIRCUIT
CN7 PSW
R9 100 D4 R10 22K R11 47K R14 10K R15 22K
Q3 Q2 Q1
Reset Circuit
ΔF R1 1W0.22
IC1
+5V Switching Regulator
IC2 +15V Regulator
IC3 -15V Regulator
PA POWER AMPLIFIER CIRCUIT
Rectifier
(BLU) 30V (BLK) 0V (BLU) 30V
ΔD1 ΔD2 ΔD4 ΔD5 ΔD8 ΔD9 ΔD11 ΔD12
-38V 40mV +38V 70mV
-Vcc +Vcc
C29 50V10000 C13 50V10000 ΔC30 250V0.1
IC1-1 Power Amplifier
IC1-2 Power Amplifier
IC2-1 Power Amplifier
IC2-2 Power Amplifier
CN1 WFO LCHO E RCHO CCHO
CN4 E PMUT
CN3 MOL E MOR
CN2 TWL SPL WF E E E E CSP SPR TWR
LCHO WFO RCHO
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

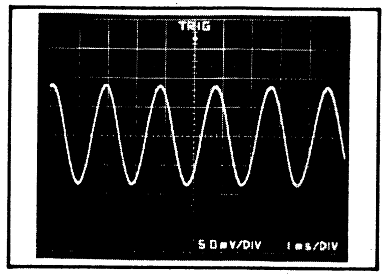
OWER SUPPLY, SUB POWER SUPPLY, MAIN POWER SUPPLY, POWER AMPLIFIER & CONNECTOR CIRCUIT DIAGRAM


5
6
7
8
9
10
11
12
13
14
RCUIT
+12V Regulator
IC1
Regulator
CN5
CN4
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
SP7, 6 x 13cm, 16Ω
SP8, 6 x 13cm, 16Ω
Power SW
S1
CN CONNECTOR CIRCUIT
CN6
CN3
CN1
CN4
CN2
CN7
CN8
PKB CN1
MAIN CN5
EJ CN5
PSM MAIN POWER SUPPLY CIRCUIT
Reset Circuit
+5V Switching Regulator
IC2 +15V Regulator
IC3 -15V Regulator
FDCN CN4
MAIN CN1
Power Indicator D1
CUIT
Rectifier
+38V
70mV
IC1-1
Power Amplifier
IC1-2
Power Amplifier
IC2-1
Power Amplifier
IC2-2
Power Amplifier
LCHO
WFO
+Vcc
-Vcc
SP5 2.5cm,4Ω
SP3 20cm, 8Ω
SP1 30cm, 8Ω
SP2 20cm, 8Ω
SP4 20cm, 8Ω
SP6 2.5cm,4Ω

■ Measuring Conditions

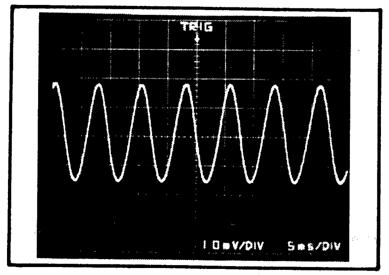
1. Set to the initial mode. (Refer to page I-3)
2. Set the all parts INITIAL TOUCH SENSE function (EFFECT MODE: Page 6) to "0". (Upper=0, Lower=0, Bass=0)
3. Change the unit setting as indicate below the pictures to confirm the waveforms.

❶



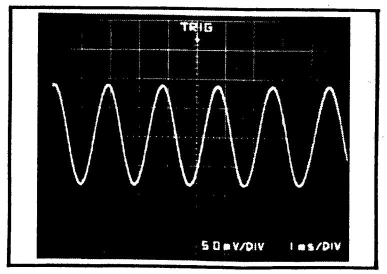
- Upper Tab & Organ............Flute 8'
- EXP, Main Vol....................Max
- Upper Keyboard.................C4 Key

❷



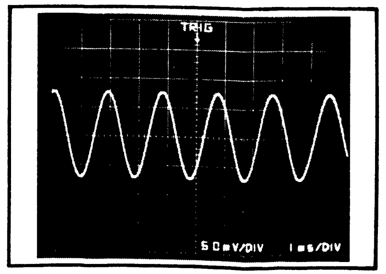
- Bass....................................Bass 8'
- EXP, Main Vol....................Max
- Pedal Keyboard.................C2 Key

❸



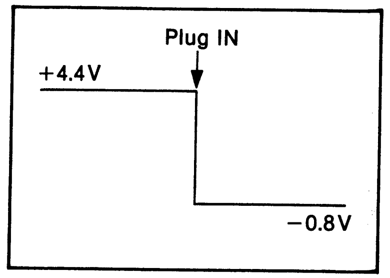
- Upper Tab & Organ............Flute 8'
- EXP, Main Vol....................Max
- Upper Keyboard.................C4 Key

❹



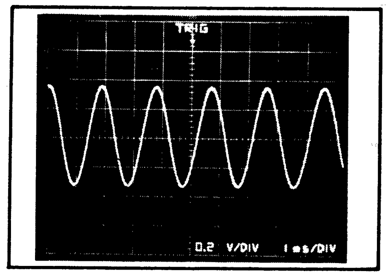
- Upper Tab & Organ............Flute 8'
- EXP, Main Vol....................Max
- Upper Keyboard.................C4 Key

❺



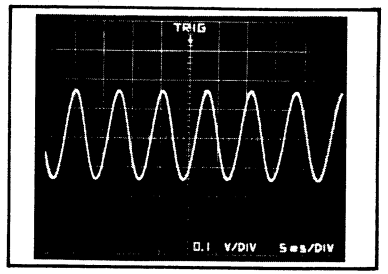
- HP Plug..................................IN

❻



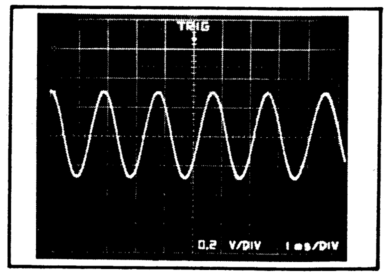
- Upper Tab & Organ............Flute 8'
- EXP, Main Vol....................Max
- Upper Keyboard.................C4 Key

❼



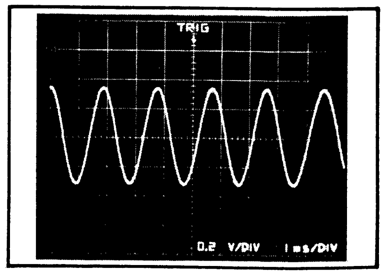
- Bass....................................Bass 8'
- EXP, Main Vol....................Max
- Pedal Keyboard.................C2 Key

❽



- Upper Tab & Organ............Flute 8'
- EXP, Main Vol....................Max
- Upper Keyboard.................C4 Key

❾

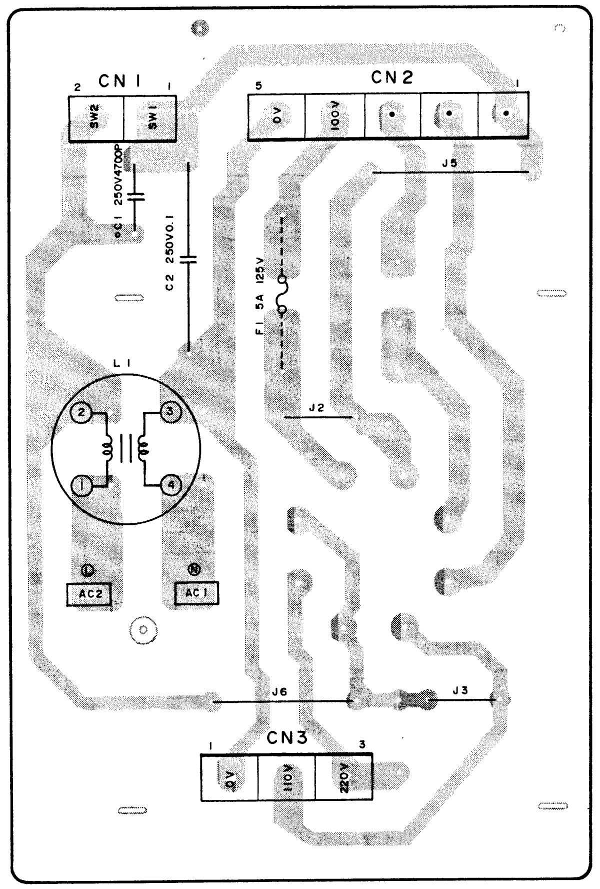


- Upper Tab & Organ............Flute 8'
- EXP, Main Vol....................Max
- Upper Keyboard.................C4 Key

ACP PSS PSM AC POWER SUPPLY, SUB POWER SUPPLY, MAIN POWER SUPPLY CIRCUIT BOARD

ACP AC POWER SUPPLY P.C.B.

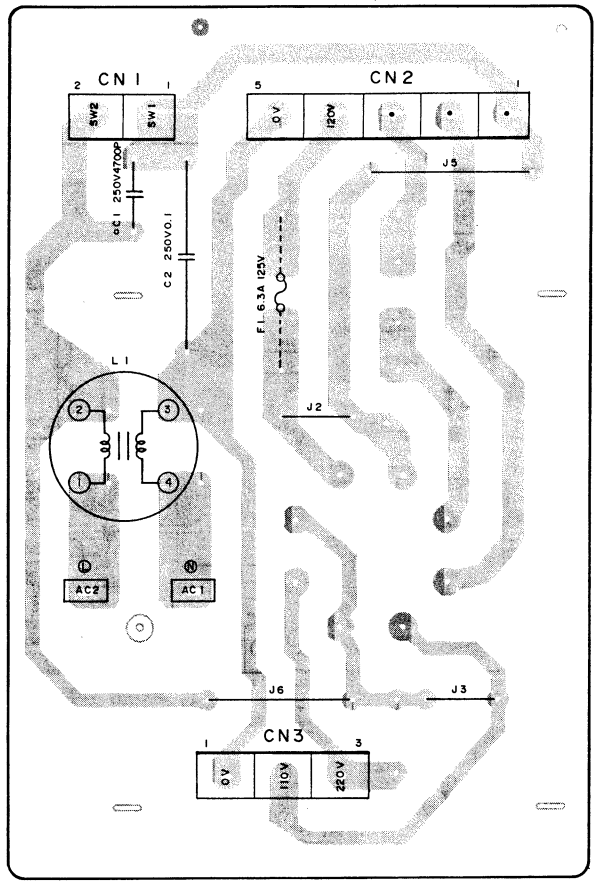
• [N] only **SOPG201511A**



CN1
SW2
SW1
CN2
0V
100V
J5
C1 250V4700P
C2 250V0.1
F1 5A 125V
L1
J2
AC2
AC1
J6
J3
CN3
0V
110V
220V

NOTE: F1: XBA1C50NS5

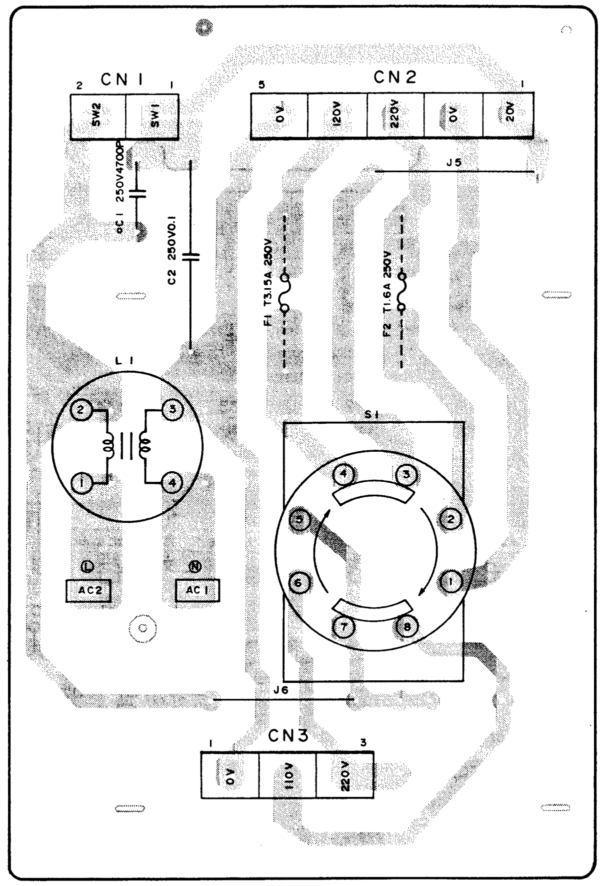
• [M] [MC] only **SOPG201561A**



CN1
SW2
SW1
CN2
0V
120V
J5
C1 250V4700P
C2 250V0.1
F1 6.3A 125V
L1
J2
AC2
AC1
J6
J3
CN3
0V
110V
220V

NOTE: F1: XBA1C63NU100

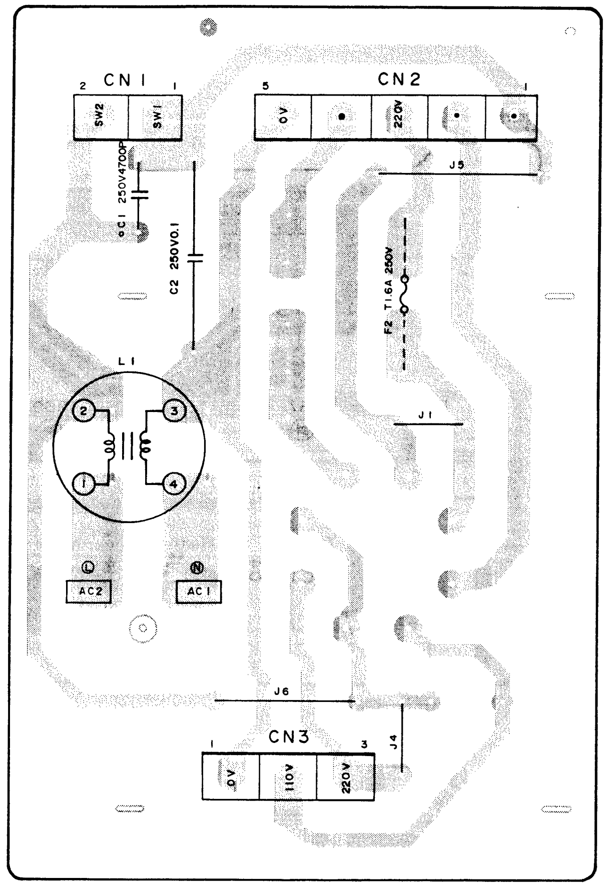
• [EK] [XL] [XR] [XS] [XD] [X] only **SOPG201531A**



CN1
SW2
SW1
CN2
0V
120V
220V
0V
20V
J5
C1 250V4700P
C2 250V0.1
F1 T3.15A 250V
F2 T1.6A 250V
L1
S1
AC2
AC1
J6
CN3
0V
110V
220V

NOTES: F1: XBA2C31TB0 F2: XBA2C16TB0

• Others **SOPG201521A**



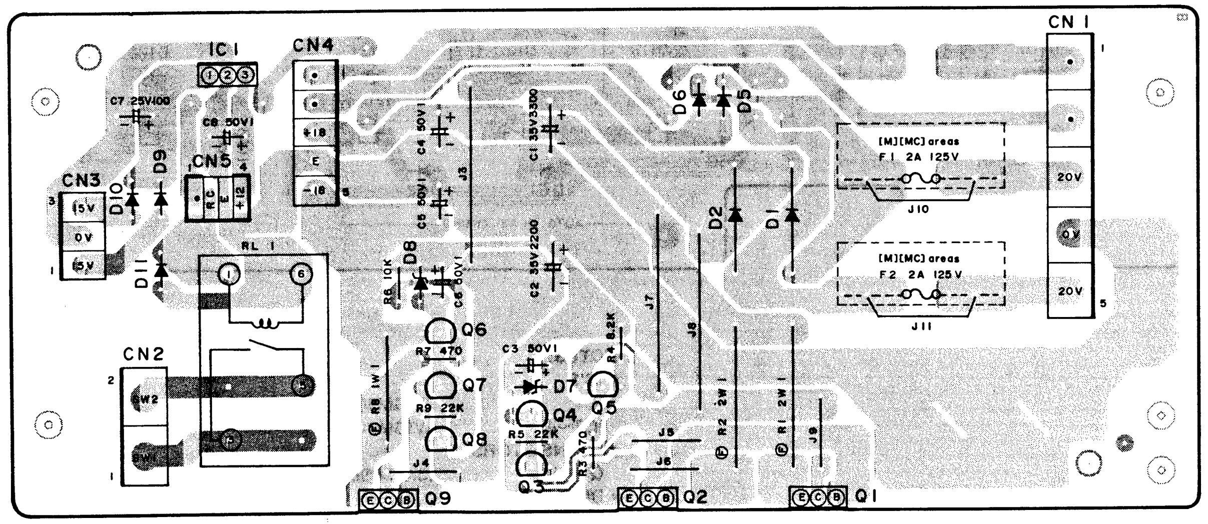
CN1
SW2
SW1
CN2
0V
220V
J5
C1 250V4700P
C2 250V0.1
F2 T1.6A 250V
L1
J1
AC2
AC1
J6
J4
CN3
0V
110V
220V

NOTE: F2: XBA2C16TB0

PSS SUB POWER SUPPLY P.C.B.

• [M] [MC] only **SXPG201521B**

• Others **SXPG201511B**



IC1
CN4
CN1
C7 25V100
C8 50V1
CN3
CN5
D9
D10
D11
RL1
CN2
SW2
SW1
C1 35V3300
C4 50V1
C5 50V1
C6 50V1
C2 35V2200
C3 50V1
D6
D5
D2
D1
D7
D8
Q6
Q7
Q8
Q5
Q4
Q3
R7 470
R9 22K
R5 22K
R4 8.2K
R6 10K
R8 1W1
R2 2W1
R1 2W1
R3 470
[M][MC] areas F1 2A 125V
[M][MC] areas F2 2A 125V
J3
J4
J5
J6
J7
J8
J9
J10
J11
20V
Q9
Q2
Q1

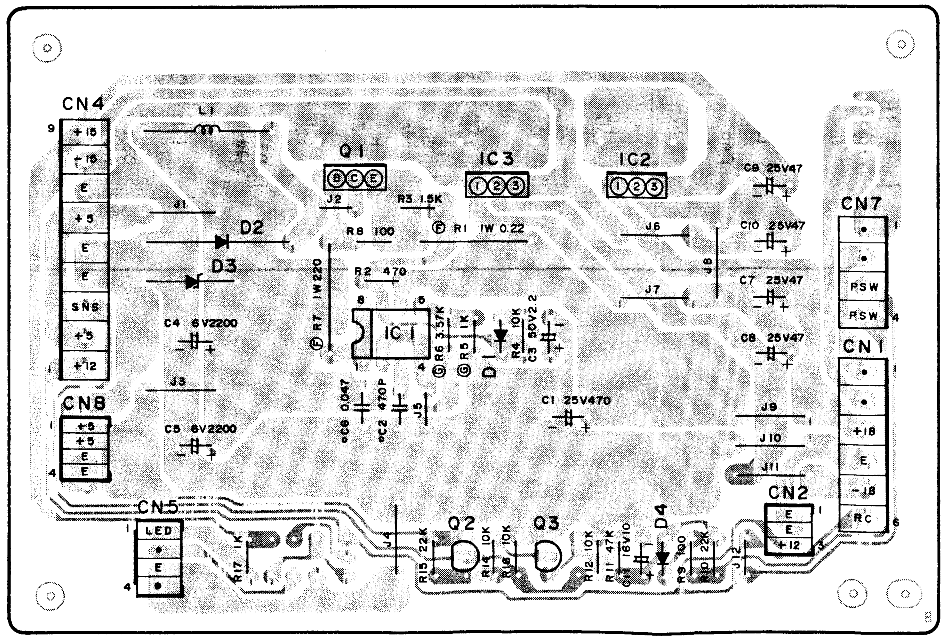
PSS
NOTES:
- IC
  - IC1: SVIGM5F7812
- FUSES
  - F1, 2: **M** **MC** XBA1C20NU100

- TRANSISTORS
  - Q1, 2: 2SD1266
  - Q3, 5: 2SC2320LFG
  - Q4, 7: 2SJ105GR
  - Q6, 8: 2SA1015-GR
  - Q9: 2SB941

- DIODES
  - D1, 2: SVDGGP20GL
  - D5, 6, 9, 10: SVDGERA1502Y
  - D7, 8: MA4200
  - D11: MA165TA5

PSM MAIN POWER SUPPLY P.C.B.

SXPG201511C



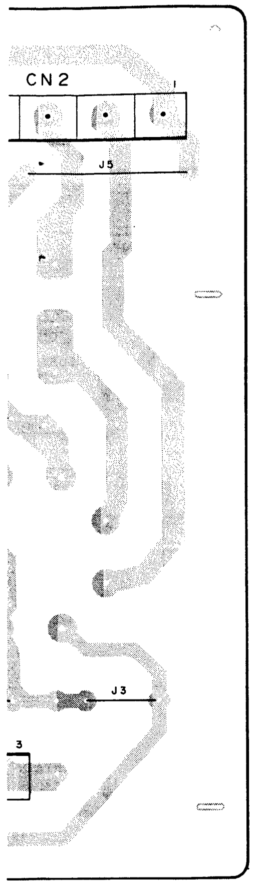
CN4
+18
-18
E
+5
SNS
+12
L1
Q1
IC3
IC2
J1
J2
D2
D3
R3 1.5K
R8 100
R1 1W 0.22
R2 470
R7 1W 220
IC1
C4 6V2200
C5 6V2200
C6 0.047
C2 470P
C1 25V470
C9 25V47
C10 25V47
C7 25V47
C8 25V47
CN7
RSW
PSW
CN1
CN8
CN5
LED
CN2
Q2
Q3
D4
D1
R17 1K
R15 22K
R14 10K
R12 10K
R11 47K
J3
J4
J6
J7
J8
J9
J10
J11
J12
RC

PSM
NOTES:
- IC'S
  - IC1: SVIGM5291P
  - IC2: SVIGM5F7815
  - IC3: SVIGM5F7915
- TRANSISTORS
  - Q1: 2SB953AQP
  - Q2: 2SA1015-GR
  - Q3: 2SC2320LFG
- DIODES
  - D1, 4: MA165TA5
  - D2: SVDGERC9102
  - D3: MA2062LF

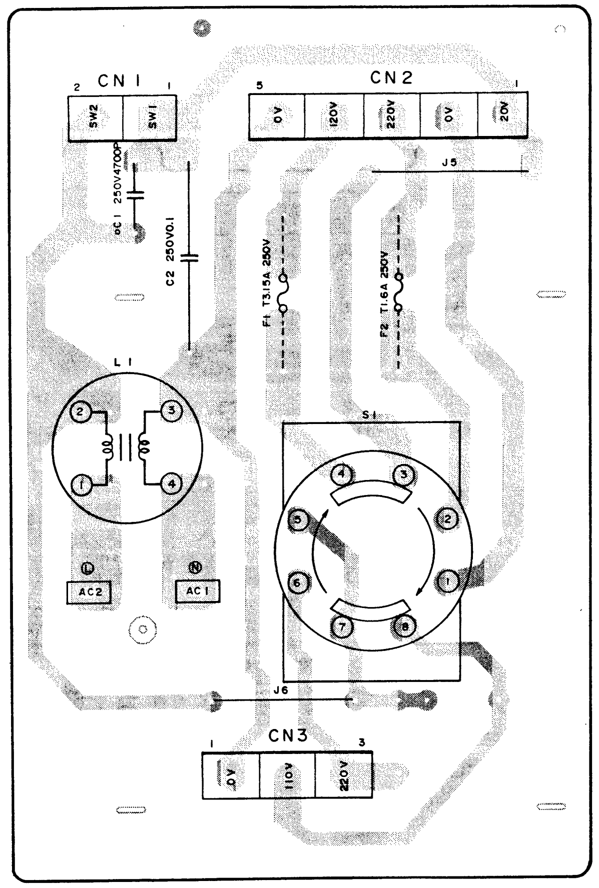
Y, SUB POWER SUPPLY, MAIN POWER SUPPLY CIRCUIT BOARD

5 6 7 8 9

OPG201561A

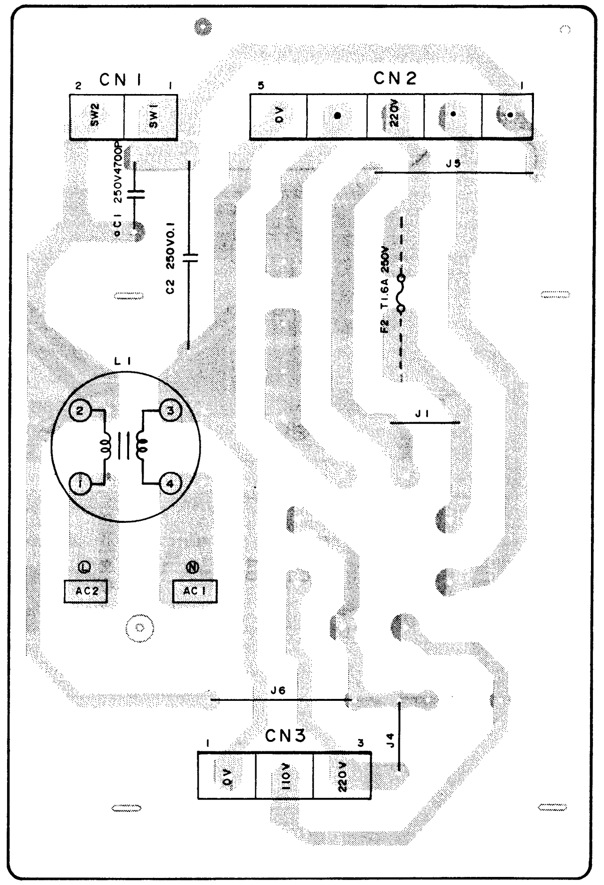


• [EK] [XL] [XR] [XS] [XD] [X] only **SOPG201531A**


CN 1
SW2
SW1
CN 2
0V
120V
220V
0V
20V
J5
C1 250V4700P
C2 250V0.1
F1 T3.15A 250V
F2 T1.6A 250V
L1
S1
AC2
AC1
J6
CN 3
0V
110V
220V

NOTES: F1: XBA2C31TB0 F2: XBA2C16TB0

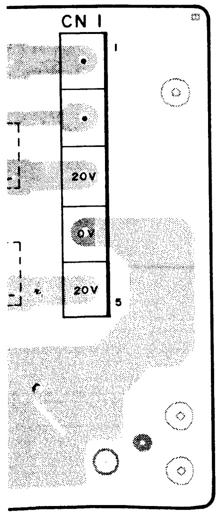
• Others **SOPG201521A**


CN 1
SW2
SW1
CN 2
0V
220V
J5
C1 250V4700P
C2 250V0.1
F2 T1.6A 250V
L1
J1
AC2
AC1
J6
CN 3
0V
110V
220V
J4

NOTE: F2: XBA2C16TB0

PG201521B

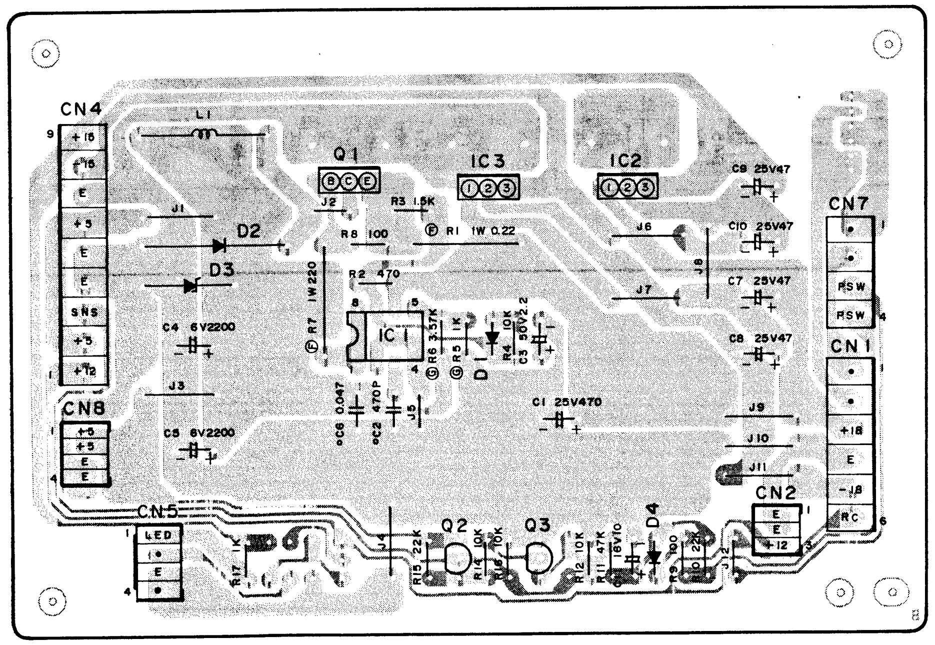
PG201511B


CN 1
20V
0V
20V

P20GL
RA1502Y
)
'A5

PSM **MAIN POWER SUPPLY P.C.B.**

SXPG201511C


CN4
+15
-15
E
+5
E
E
SNS
+5
+12
CN8
+5
+5
E
E
CN5
LED
L1
J1
D2
D3
C4 6V2200
J3
C5 6V2200
Q1
J2
IC3
IC2
R3 1.5K
R8 100
R1 1W 0.22
R2 470
R7 1W 220
IC1
R6 3.3K
R5 1K
R4 10K
C3 50V2.2
D1
C6 0.047
C2 470P
C1 25V470
J6
J7
J8
C8 25V47
C10 25V47
C7 25V47
C9 25V47
J9
J10
J11
CN7
RSW
RSW
CN1
+18
E
-18
RC
CN2
E
E
+12
Q2
Q3
D4
R15 22K
R14 10K
R16 10K
R12 10K
R11 47K
R17 1K

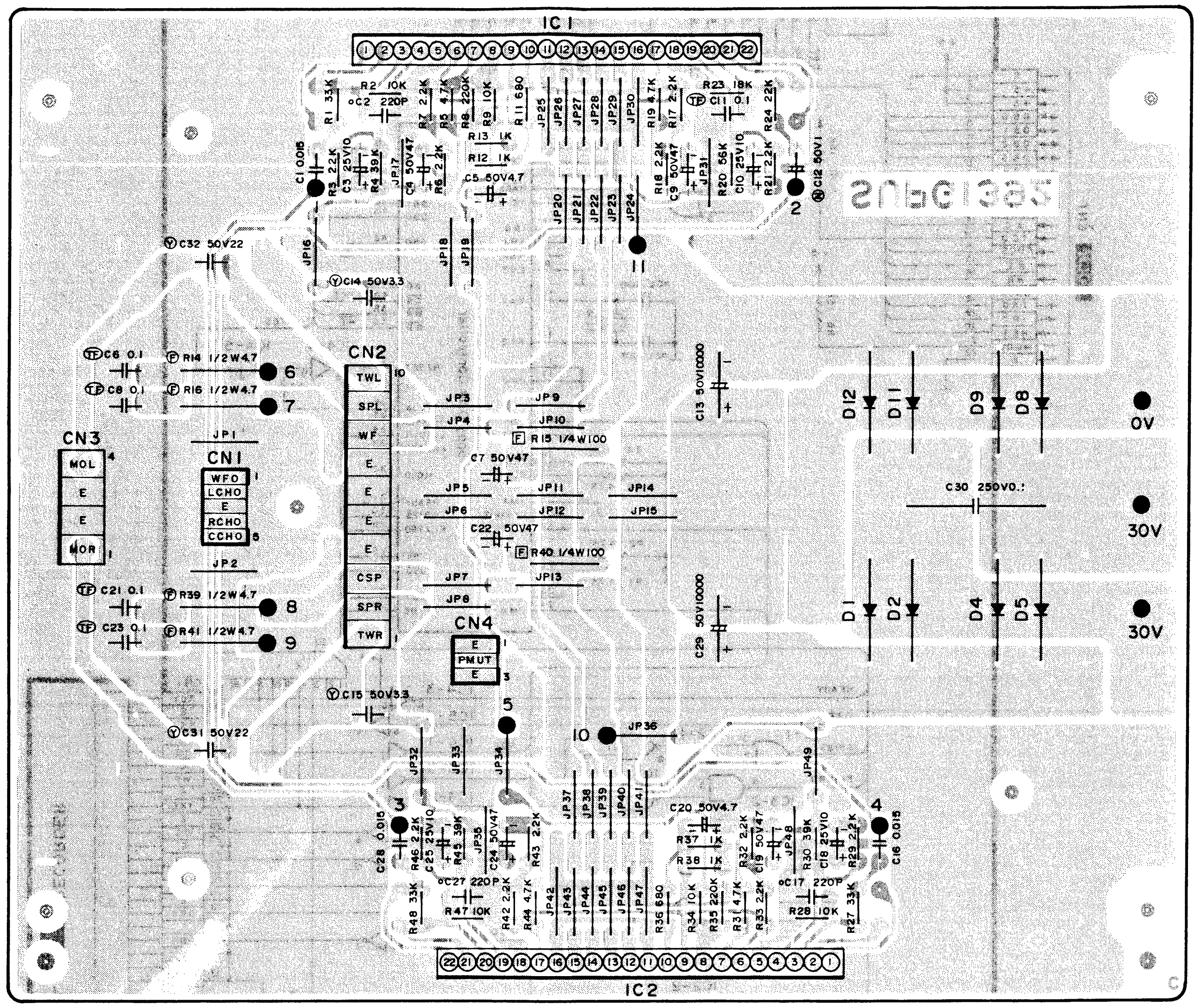
PSM
NOTES:

• IC'S	
IC1:	SVIGM5291P
IC2:	SVIGM5F7815
IC3:	SVIGM5F7915
• TRANSISTORS	
Q1:	2SB953AQP
Q2:	2SA1015-GR
Q3:	2SC2320LFG
• DIODES	
D1, 4:	MA165TA5
D2:	SVDGERC9102
D3:	MA2062LF

PA POWER AMPLIFIER CIRCUIT BOARD

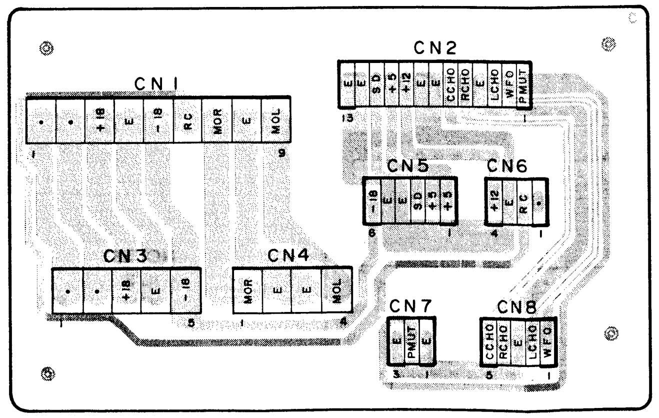
1 2 3 4

SXPG139261


A
B
C
D
IC 1
IC 2
R1 33K
R2 10K
C2 220P
C1 0.015
R23 18K
C11 0.1
R24 22K
C12 50V1
C32 50V22
C14 50V3.3
C6 0.1
C8 0.1
R14 1/2W4.7
R16 1/2W4.7
CN2
TWL
SPL
WF
E
E
E
E
CSP
SPR
TWR
CN3
MOL
E
E
MOR
CN1
WFO
LCHO
E
RCHO
CCHO
JP1
JP2
R15 1/4W100
C7 50V47
C22 50V47
R40 1/4W100
C21 0.1
C23 0.1
R39 1/2W4.7
R41 1/2W4.7
CN4
E
PMUT
E
C15 50V3.3
C31 50V22
C13 50V10000
C29 50V10000
C30 250V0.1
D12
D11
D9
D8
D1
D2
D4
D5
0V
30V
30V
C20 50V4.7
C17 220P
C27 220P
C16 0.015
C28 0.015
R47 10K
R29 10K
1
2
3
4
5
6
7
8
9
10
11

CN CONNECTOR BOARD

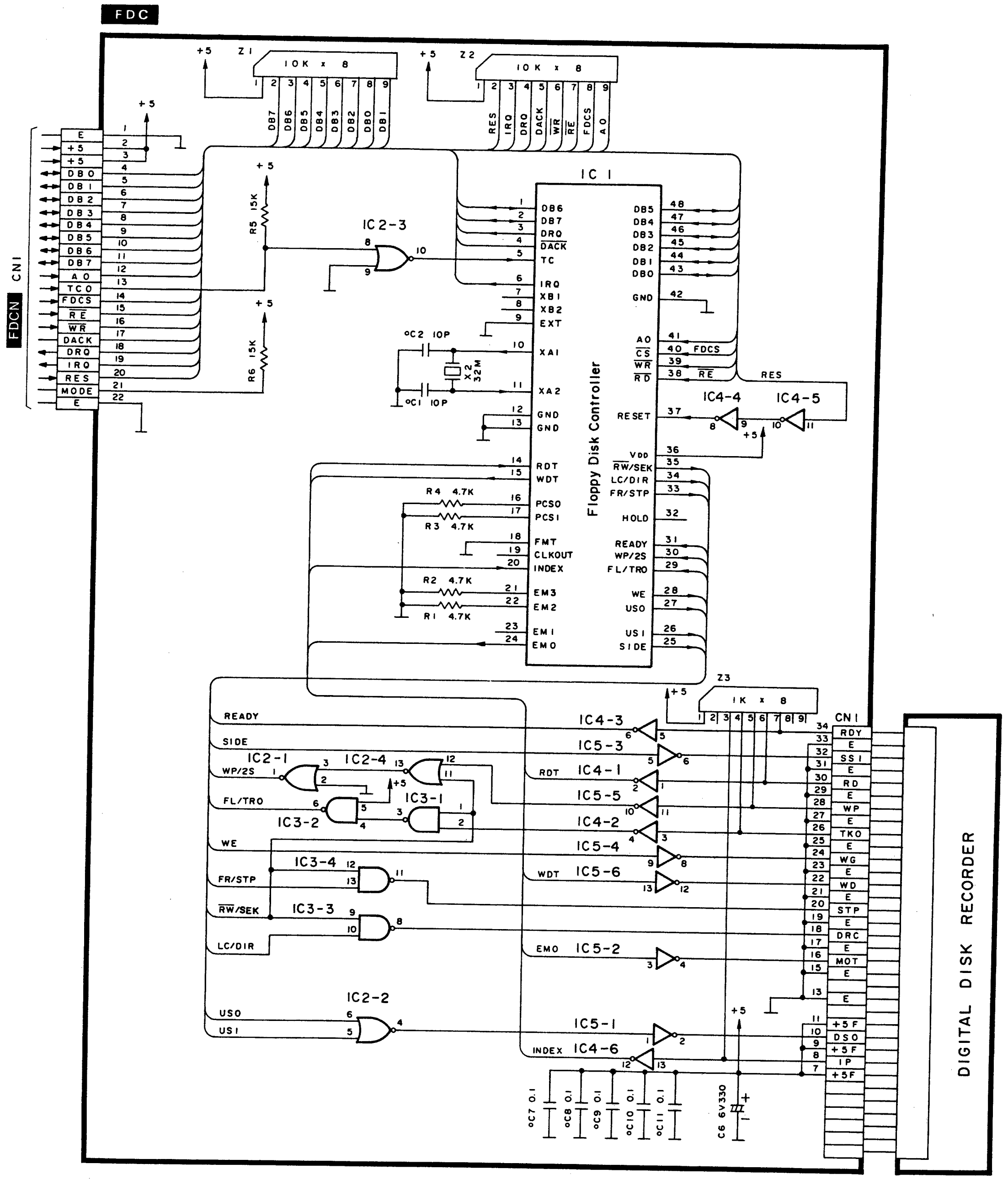
SXPG200711B


E
F
CN1
+18
E
-18
RC
MOR
E
MOL
CN2
E
SD
+12
E
CCHO
RCHO
E
LCHO
WFO
PMUT
CN5
-18
E
SD
+5
+5
CN6
+12
E
RC
CN3
+18
E
-18
CN4
MOR
E
E
MOL
CN7
PMUT
E
CN8
CCHO
RCHO
E
LCHO
WFO

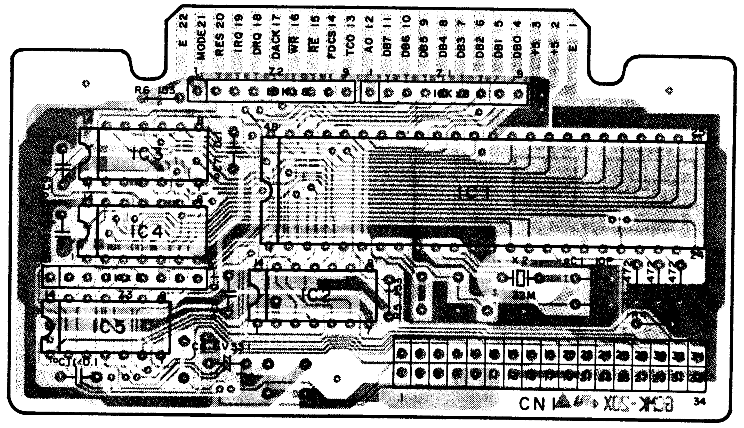
PA
NOTES:

• IC'S	
IC1, 2:	SVIGS4221M2M
• DIODES	
D1, 2, 4, 5, 8, 9, 11, 12:	SVDGS3V20-15

FDC FD CONTROL CIRCUIT (LOCATED IN THE DIGITAL DISK RECORDER)


FDC
Z1 10K × 8
Z2 10K × 8
Z3 1K × 8
IC 1
Floppy Disk Controller
IC2-3
IC4-4
IC4-5
IC2-1
IC2-4
IC3-1
IC3-2
IC3-4
IC3-3
IC2-2
IC4-3
IC5-3
IC4-1
IC5-5
IC4-2
IC5-4
IC5-6
IC5-2
IC5-1
IC4-6
FDCN CN1
CN1
DIGITAL DISK RECORDER
R5 15K
R6 15K
R4 4.7K
R3 4.7K
R2 4.7K
R1 4.7K
C2 10P
C1 10P
X2 32M
C7 0.1
C8 0.1
C9 0.1
C10 0.1
C11 0.1
C6 6V330
READY
SIDE
WP/2S
FL/TRO
WE
FR/STP
RW/SEK
LC/DIR
USO
US1
RDT
WDT
EMO
INDEX

Circuit view on top of P.C.B.


IC1
IC4
IC5
X2
32M
CN1

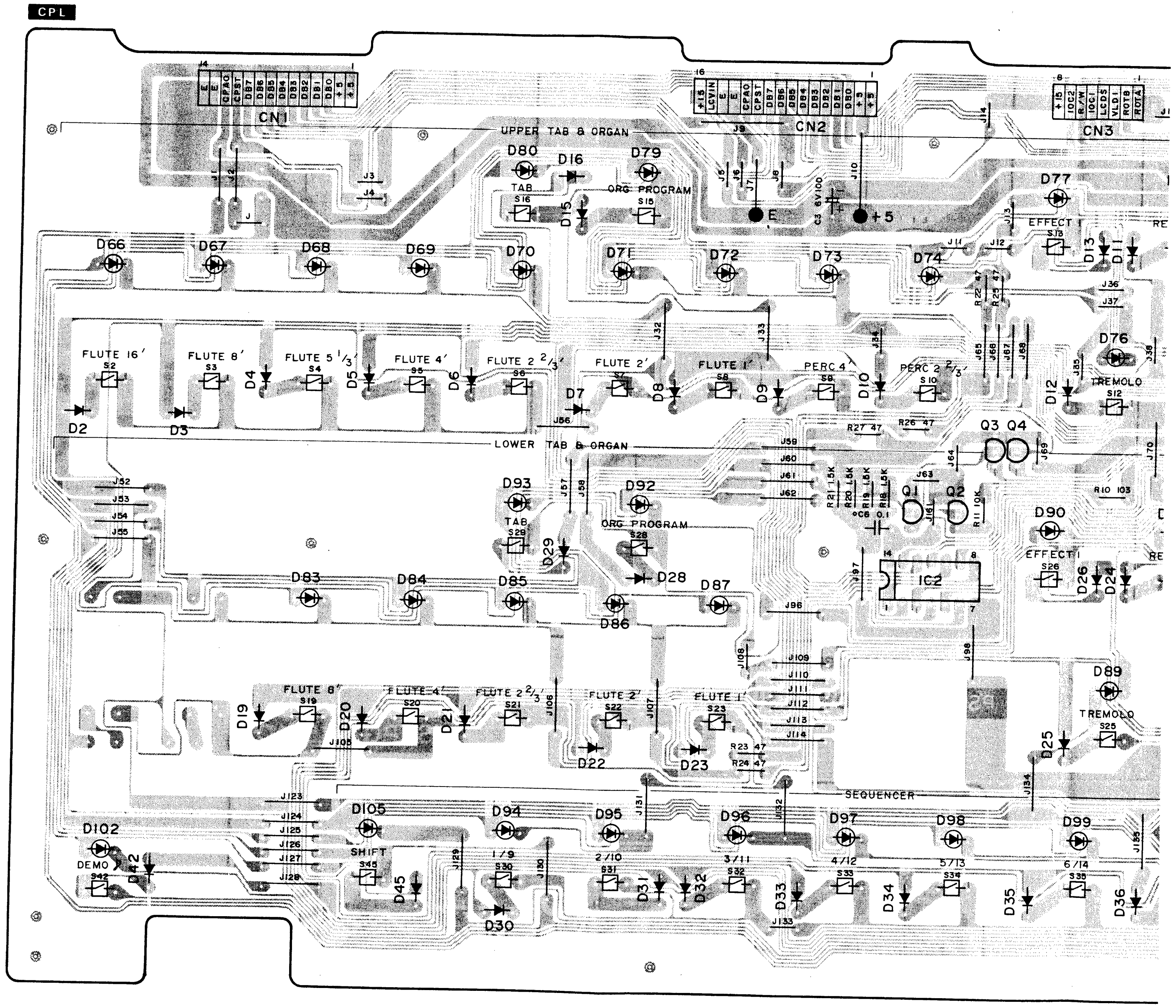
SXPG146111

NOTES:

- IC'S

IC1:	SVIGD72067C
IC2:	SVIGM74H02
IC3:	SVIGM74H00
IC4:	SVIGM74H14
IC5:	SVIGM74H04

CPL ESW UPPER CONTROL PANEL LEFT, ENCODER

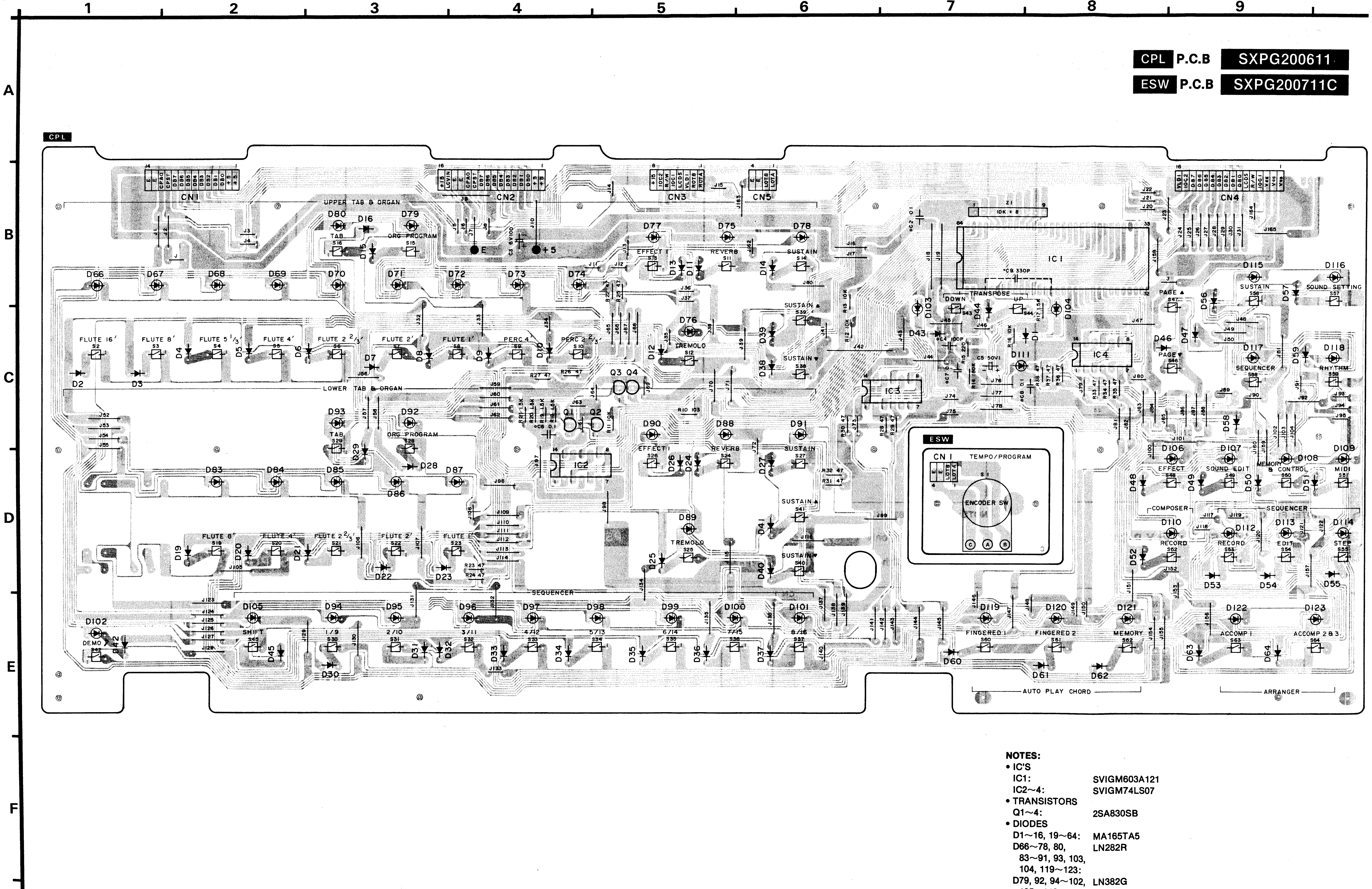

CPL
CN1
CN2
CN3
UPPER TAB & ORGAN
LOWER TAB & ORGAN
TAB
ORG PROGRAM
EFFECT I
FLUTE 16'
FLUTE 8'
FLUTE 5 1/3'
FLUTE 4'
FLUTE 2 2/3'
FLUTE 2'
FLUTE 1'
PERC 4'
PERC 2 2/3'
TREMOLO
SEQUENCER
DEMO
SHIFT
1/9
2/10
3/11
4/12
5/13
6/14
IC2
Q1
Q2
Q3
Q4
E
+5

CPL **ESW**

UPPER CONTROL PANEL LEFT, ENCODER SWITCH CIRCUIT BOARD

CPL P.C.B SXPG200611

ESW P.C.B SXPG200711C



1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
CPL
CN1
CN2
CN3
CN5
CN4
UPPER TAB & ORGAN
LOWER TAB & ORGAN
SEQUENCER
TAB
ORG PROGRAM
EFFECT I
REVERB
SUSTAIN
FLUTE 16'
FLUTE 8'
FLUTE 5 1/3'
FLUTE 4'
FLUTE 2 2/3'
FLUTE 2'
FLUTE 1'
PERC 4'
PERC 2 2/3'
TREMOLO
SUSTAIN ▲
SUSTAIN ▼
IC1
IC2
IC3
IC4
Z1 10K × 8
Q1
Q2
Q3
Q4
TRANSPOSE
DOWN
UP
PAGE ▲
PAGE ▼
SOUND SETTING
SEQUENCER
RHYTHM
EFFECT
SOUND EDIT
MEMORY & CONTROL
MIDI
COMPOSER
RECORD
EDIT
STEP
ESW
CN 1
TEMPO/PROGRAM
S1
ENCODER SW
DEMO
SHIFT
1/9
2/10
3/11
4/12
5/13
6/14
7/15
8/16
FINGERED 1
FINGERED 2
MEMORY
ACCOMP 1
ACCOMP 2 & 3
AUTO PLAY CHORD
ARRANGER
E
+5

NOTES:

- IC'S

IC1:	SVIGM603A121
IC2~4:	SVIGM74LS07

- TRANSISTORS

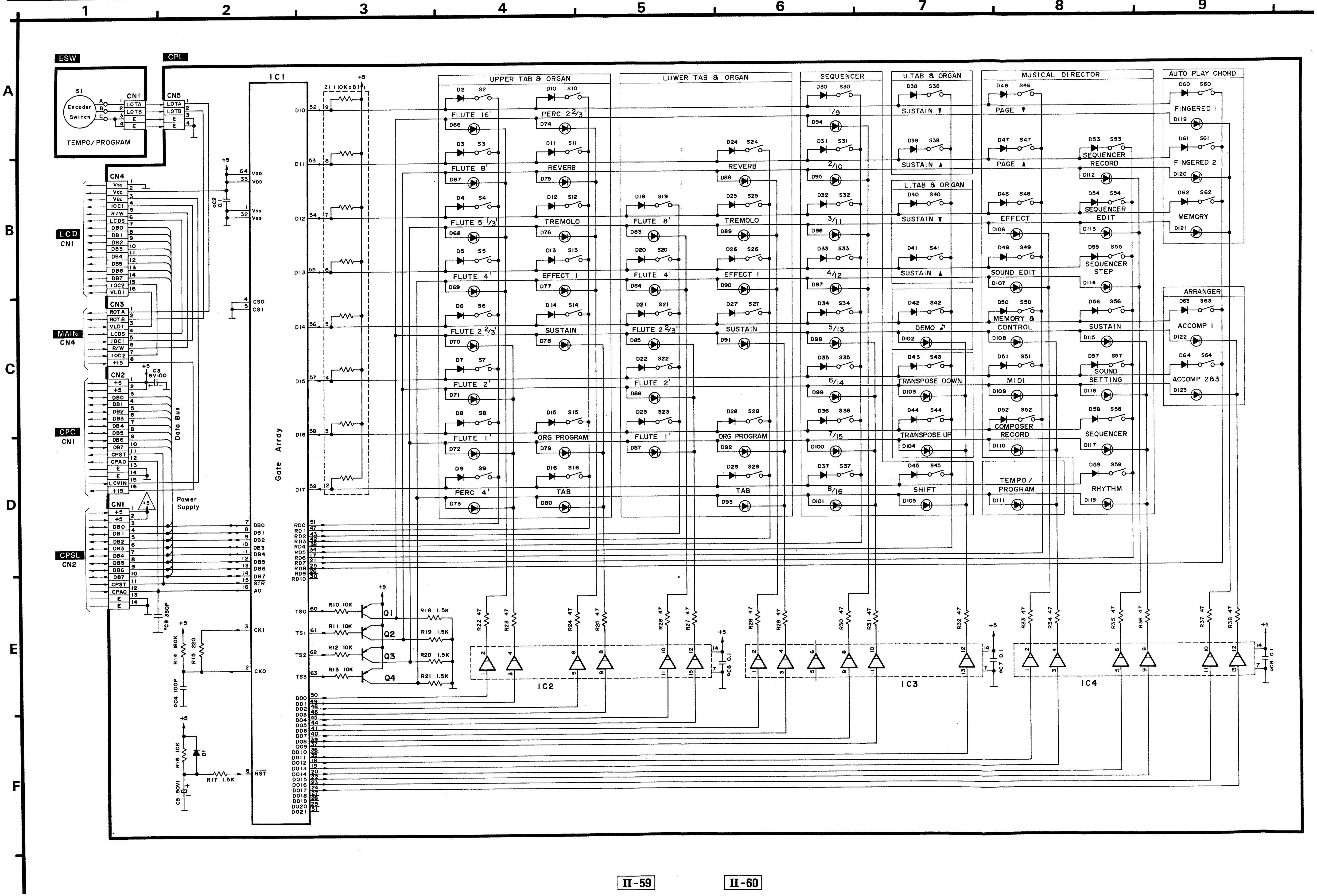
Q1~4:	2SA830SB

- DIODES

D1~16, 19~64:	MA165TA5
D66~78, 80, 83~91, 93, 103, 104, 119~123:	LN282R
D79, 92, 94~102, 105~118:	LN382G

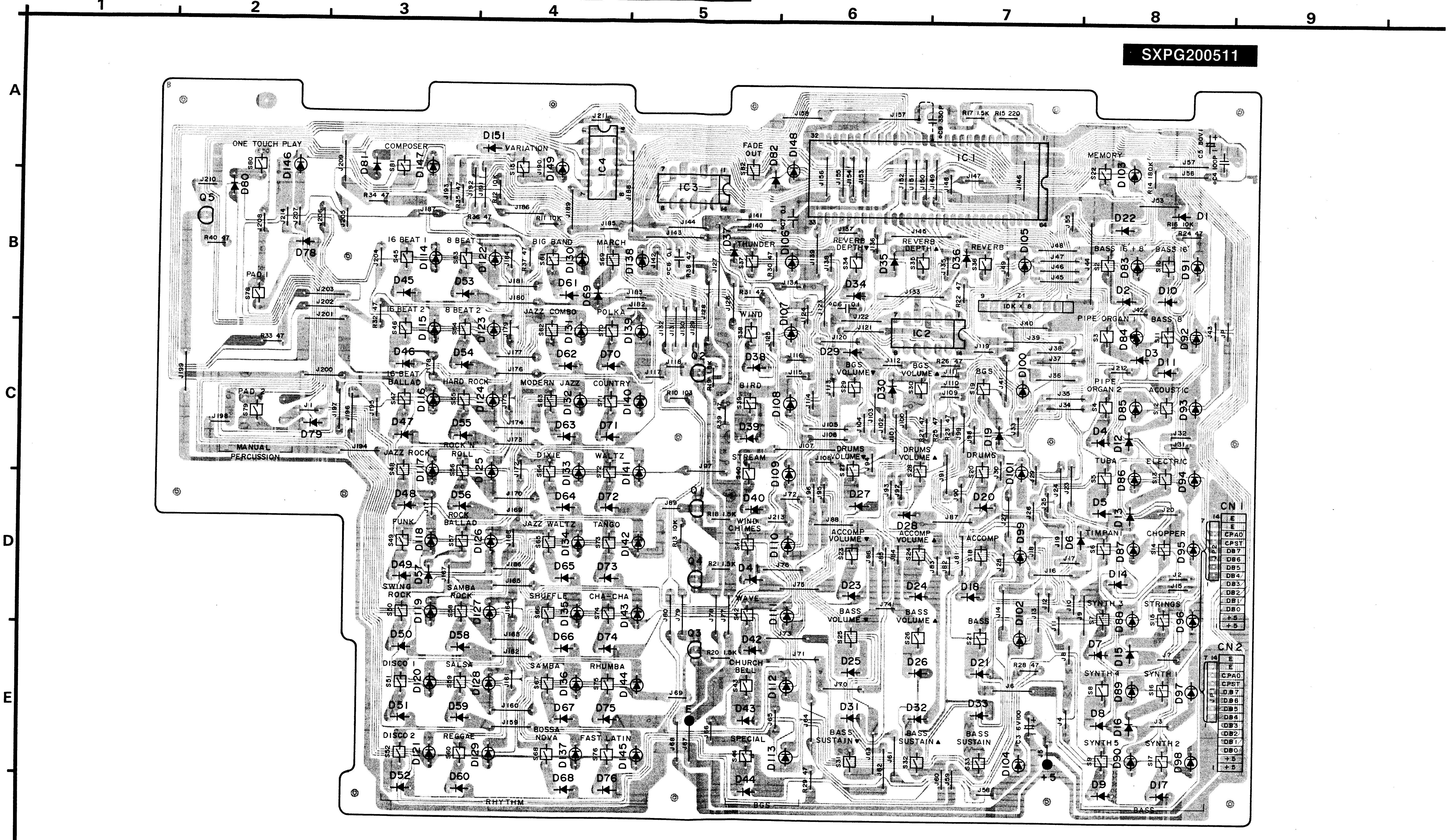
CPL **ESW**

UPPER CONTROL PANEL LEFT, ENCODER SWITCH CIRCUIT DIAGRAM


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
ESW
CPL
S1
Encoder Switch
TEMPO/PROGRAM
CN1
CN5
LOTA
LOTB
E
CN4
Vss
Vcc
VEE
IOC1
R/W
LCDS
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
IOC2
VLD1
LCD
CN1
CN3
ROT A
ROT B
MAIN
CN4
CN2
CPST
CPA0
LCVIN
+15
CPC
CN1
Data Bus
Power Supply
CPSL
CN2
C3 6V100
C2 0.1
C9 330P
R14 180K
R15 220
C4 100P
R16 10K
D1
R17 1.5K
C5 50V1
IC1
Gate Array
VDD
VSS
CS0
CS1
DI0
DI1
DI2
DI3
DI4
DI5
DI6
DI7
RD0
RD1
RD2
RD3
RD4
RD5
RD6
RD7
RD8
RD9
RD10
STR
A0
CK1
CK0
RST
TS0
TS1
TS2
TS3
DO0
DO21
Z1 (10K×8)
R10 10K
R11 10K
R12 10K
R13 10K
Q1
Q2
Q3
Q4
R18 1.5K
R19 1.5K
R20 1.5K
R21 1.5K
UPPER TAB & ORGAN
FLUTE 16'
FLUTE 8'
FLUTE 5 1/3'
FLUTE 4'
FLUTE 2 2/3'
FLUTE 2'
FLUTE 1'
PERC 4'
PERC 2 2/3'
REVERB
TREMOLO
EFFECT 1
SUSTAIN
ORG PROGRAM
TAB
LOWER TAB & ORGAN
SEQUENCER
1/9
2/10
3/11
4/12
5/13
6/14
7/15
8/16
U.TAB & ORGAN
SUSTAIN ▼
SUSTAIN ▲
L.TAB & ORGAN
DEMO ♪
TRANSPOSE DOWN
TRANSPOSE UP
SHIFT
MUSICAL DIRECTOR
PAGE ▼
PAGE ▲
EFFECT
SOUND EDIT
MEMORY & CONTROL
MIDI
COMPOSER RECORD
TEMPO/PROGRAM
SEQUENCER RECORD
SEQUENCER EDIT
SEQUENCER STEP
SOUND SETTING
SEQUENCER
RHYTHM
AUTO PLAY CHORD
FINGERED 1
FINGERED 2
MEMORY
ARRANGER
ACCOMP 1
ACCOMP 2&3
R22 47
R38 47
C6 0.1
C7 0.1
C8 0.1
IC2
IC3
IC4

CPSL

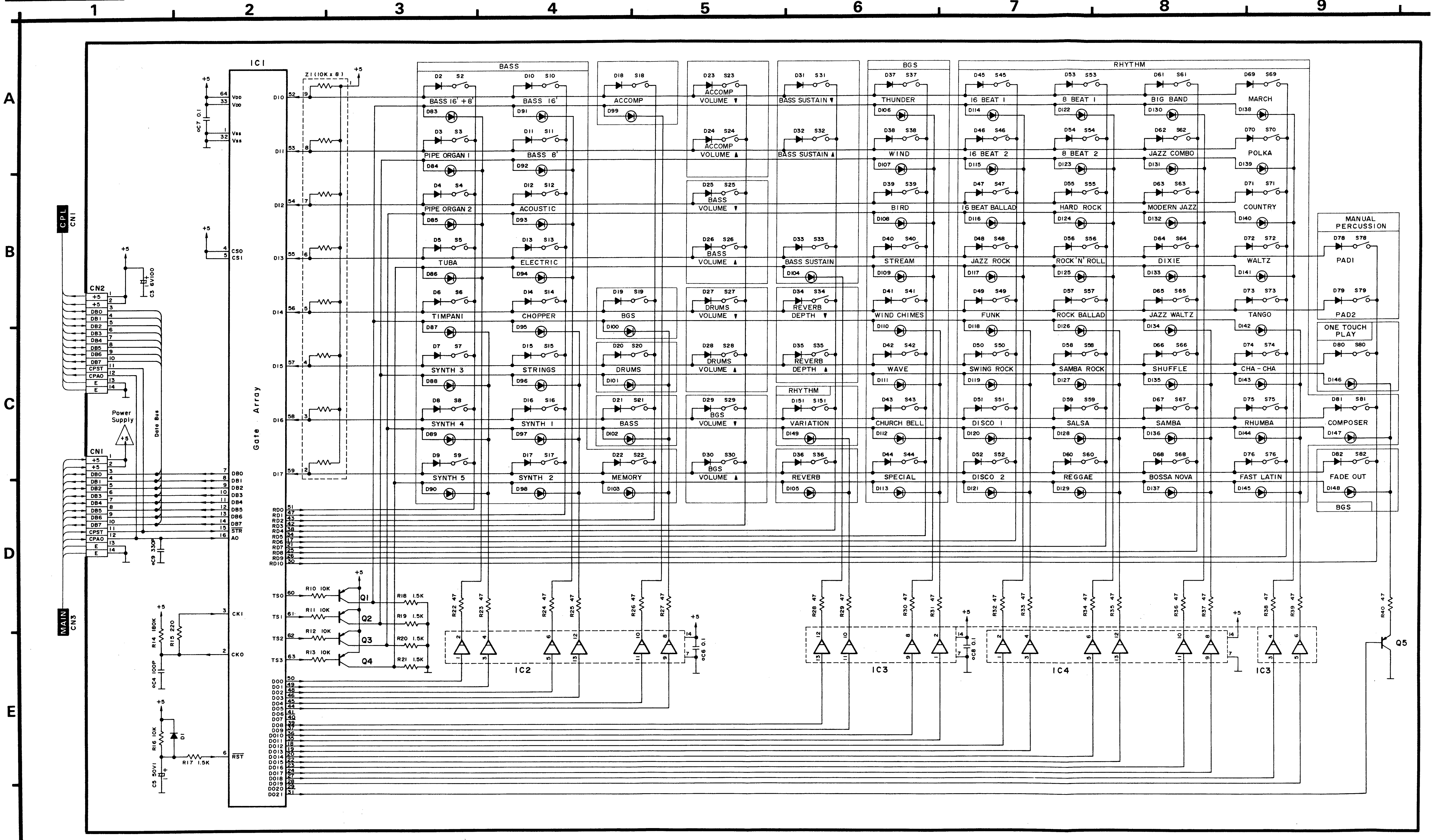
LOWER CONTROL PANEL LEFT CIRCUIT BOARD


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
SXPG200511
ONE TOUCH PLAY
COMPOSER
VARIATION
FADE OUT
MEMORY
PAD 1
PAD 2
MANUAL PERCUSSION
16 BEAT 1
8 BEAT
BIG BAND
MARCH
THUNDER
REVERB DEPTH▼
REVERB DEPTH▲
REVERB
BASS 16'+8'
BASS 16'
16 BEAT 2
8 BEAT 2
JAZZ COMBO
POLKA
WIND
PIPE ORGAN
BASS 8'
16 BEAT BALLAD
HARD ROCK
MODERN JAZZ
COUNTRY
BIRD
BGS VOLUME▼
BGS VOLUME▲
BGS
PIPE ORGAN 2
ACOUSTIC
JAZZ ROCK
ROCK'N' ROLL
DIXIE
WALTZ
STREAM
DRUMS VOLUME▼
DRUMS VOLUME▲
DRUMS
TUBA
ELECTRIC
FUNK
ROCK BALLAD
JAZZ WALTZ
TANGO
WIND CHIMES
ACCOMP VOLUME▼
ACCOMP VOLUME▲
ACCOMP
TIMPANI
CHOPPER
SWING ROCK
SAMBA ROCK
SHUFFLE
CHA-CHA
WAVE
BASS VOLUME▼
BASS VOLUME▲
BASS
SYNTH 3
STRINGS
DISCO 1
SALSA
SAMBA
RHUMBA
CHURCH BELL
SYNTH 4
SYNTH 1
DISCO 2
REGGAE
BOSSA NOVA
FAST LATIN
SPECIAL
BASS SUSTAIN▼
BASS SUSTAIN▲
BASS SUSTAIN
SYNTH 5
SYNTH 2
RHYTHM
BGS
BASS
IC1
IC2
IC3
IC4
Q1
Q2
Q3
Q4
Q5
CN1
CN2
+5

NOTES:

- **IC'S**
  - IC1: SVIGM603A121
  - IC2～4: SVIGM74LS07
- **TRANSISTORS**
  - Q1～5: 2SA830SB
- **DIODES**
  - D1～76, 78～82, 151: MA165TA5
  - D83～98, 114～145: SEL2210SM
  - D99～102, 104～113, 148: LN282R
  - D103, 146, 147, 149: LN382G

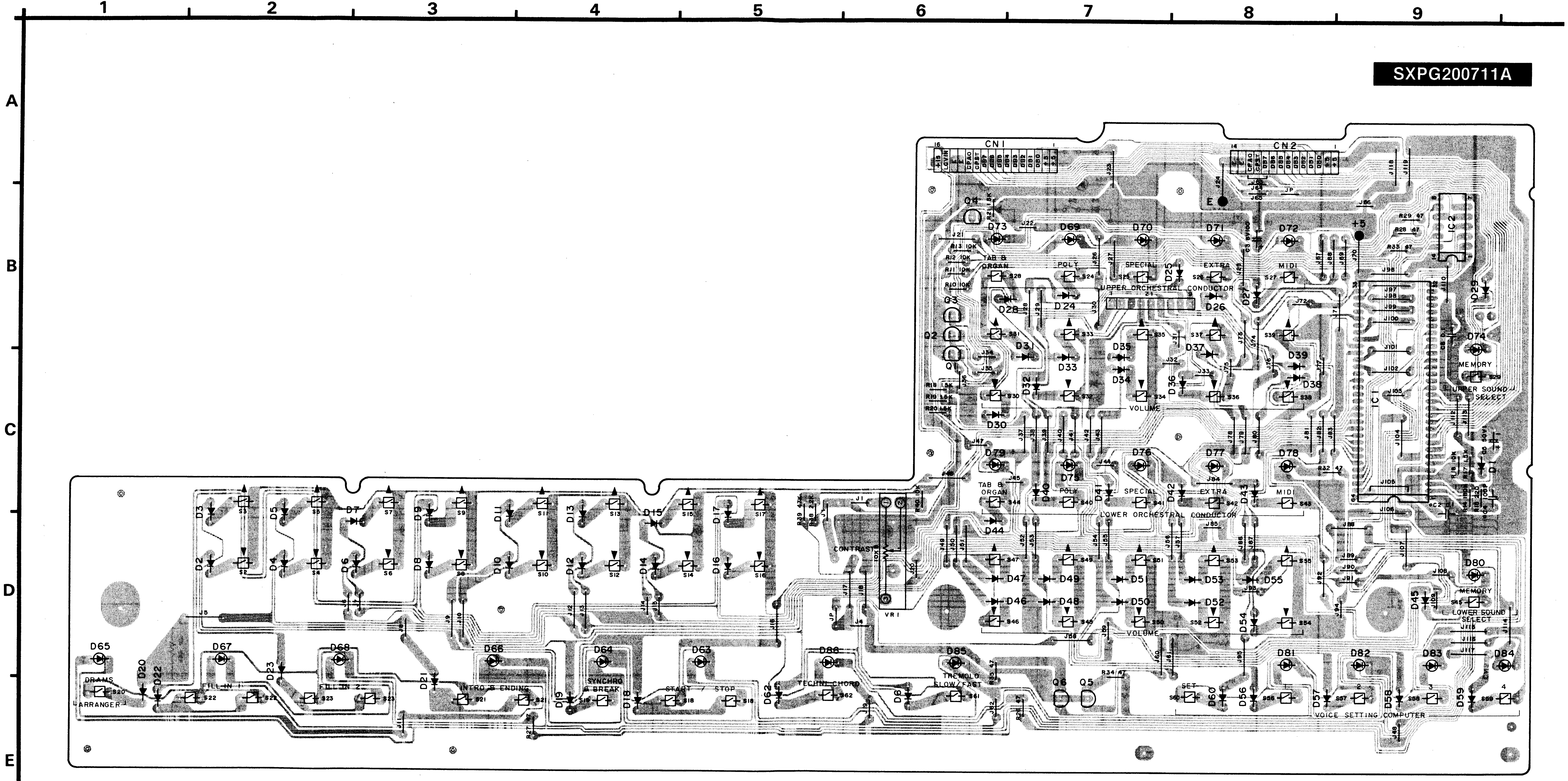
CPSL LOWER CONTROL PANEL LEFT CIRCUIT DIAGRAM


1
2
3
4
5
6
7
8
9
A
B
C
D
E
IC1
Gate Array
Z1 (10K x 8)
CPL CN1
MAIN CN3
CN2
CN1
Power Supply
Data Bus
C7 0.1
C3 6V100
C9 330P
C4 100P
C5 50V1
R14 180K
R15 220
R16 10K
R17 1.5K
D1
VDD
VSS
CS0
CS1
CK1
CK0
RST
STR
A0
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
CPST
CPA0
DI0
DI1
DI2
DI3
DI4
DI5
DI6
DI7
RD0
RD10
TS0
TS1
TS2
TS3
DO0
DO21
R10 10K
R11 10K
R12 10K
R13 10K
Q1
Q2
Q3
Q4
Q5
R18 1.5K
R19 1.5K
R20 1.5K
R21 1.5K
IC2
IC3
IC4
BASS
BASS 16' + 8'
BASS 16'
PIPE ORGAN 1
BASS 8'
PIPE ORGAN 2
ACOUSTIC
TUBA
ELECTRIC
TIMPANI
CHOPPER
SYNTH 3
STRINGS
SYNTH 4
SYNTH 1
SYNTH 5
SYNTH 2
ACCOMP
BGS
DRUMS
BASS
MEMORY
ACCOMP VOLUME ▼
ACCOMP VOLUME ▲
BASS VOLUME ▼
BASS VOLUME ▲
DRUMS VOLUME ▼
DRUMS VOLUME ▲
BGS VOLUME ▼
BGS VOLUME ▲
BASS SUSTAIN ▼
BASS SUSTAIN ▲
BASS SUSTAIN
REVERB DEPTH ▼
REVERB DEPTH ▲
RHYTHM
VARIATION
REVERB
BGS
THUNDER
WIND
BIRD
STREAM
WIND CHIMES
WAVE
CHURCH BELL
SPECIAL
RHYTHM
16 BEAT 1
16 BEAT 2
16 BEAT BALLAD
JAZZ ROCK
FUNK
SWING ROCK
DISCO 1
DISCO 2
8 BEAT 1
8 BEAT 2
HARD ROCK
ROCK 'N' ROLL
ROCK BALLAD
SAMBA ROCK
SALSA
REGGAE
BIG BAND
JAZZ COMBO
MODERN JAZZ
DIXIE
JAZZ WALTZ
SHUFFLE
SAMBA
BOSSA NOVA
MARCH
POLKA
COUNTRY
WALTZ
TANGO
CHA - CHA
RHUMBA
FAST LATIN
MANUAL PERCUSSION
PAD1
PAD2
ONE TOUCH PLAY
COMPOSER
FADE OUT
BGS

NOTES:

- IC'S
  - IC1: SVIGM603A121
  - IC2~4: SVIGM74LS07
- TRANSISTORS
  - Q1~5: 2SA830SB
- DIODES
  - D1~76, 78~82, 151: MA165TA5
  - D83~98, 114~145: SEL2210SM
  - D99~102, 104~113, 148: LN282R
  - D103, 146, 147, 149: LN382G

CPC UPPER CONTROL PANEL CENTER CIRCUIT BOARD


1
2
3
4
5
6
7
8
9
A
B
C
D
E
SXPG200711A
CN1
CN2
IC1
IC2
E
+5
Q1
Q2
Q3
Q4
Q5
Q6
TAB & ORGAN
POLY
SPECIAL
EXTRA
MIDI
UPPER ORCHESTRAL CONDUCTOR
VOLUME
MEMORY
UPPER SOUND SELECT
LOWER ORCHESTRAL CONDUCTOR
LOWER SOUND SELECT
CONTRAST
VR1
DRAMS
ARRANGER
FILL IN 1
FILL IN 2
INTRO & ENDING
SYNCHRO & BREAK
START / STOP
TECHNI CHORD
TREMOLO SLOW/FAST
SET
1
2
3
4
VOICE SETTING COMPUTER

NOTES:

- IC'S

IC1:	SVIGM603A121
IC2:	SVIGM74LS07

- TRANSISTORS

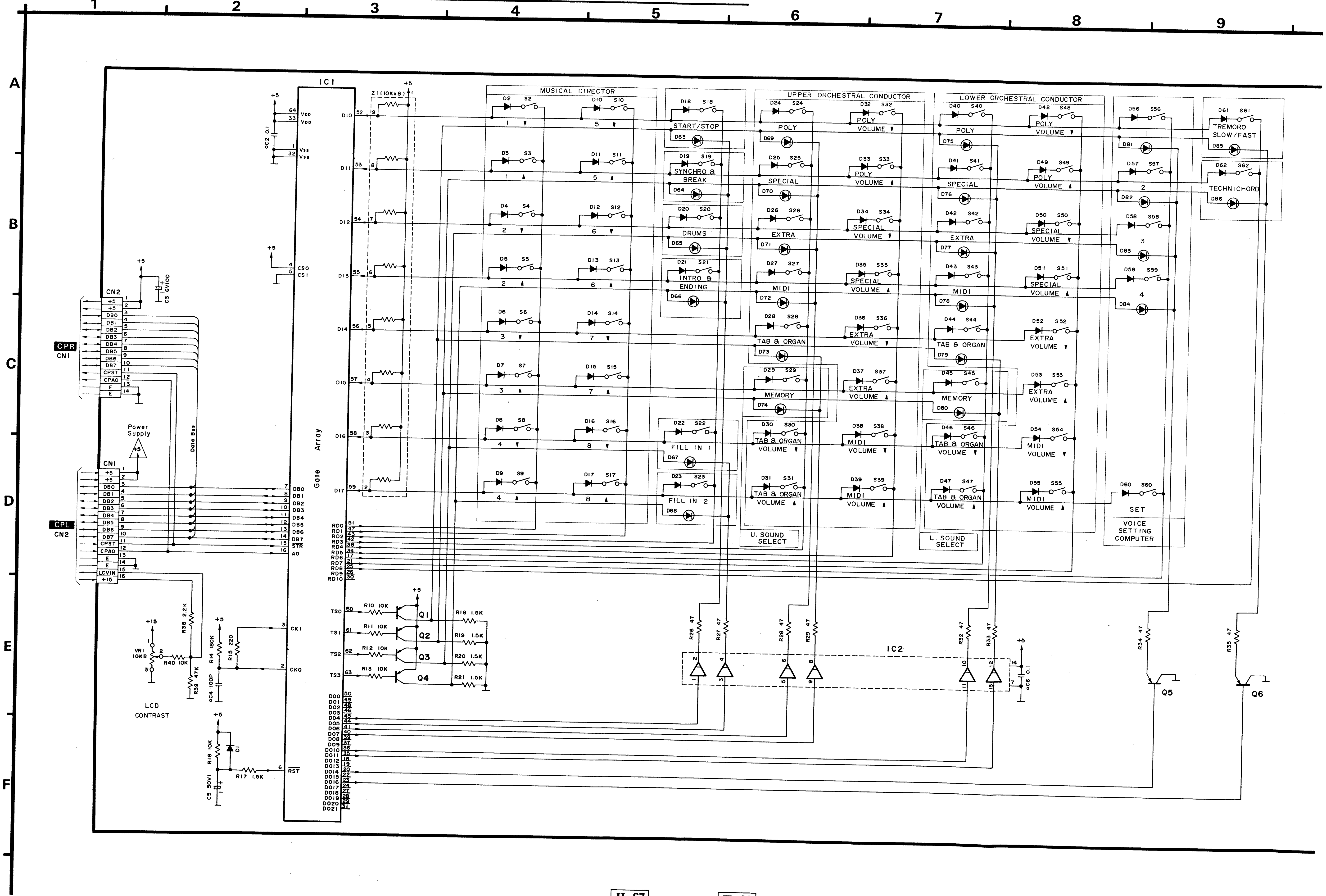
Q1~6:	2SA830SB

- DIODES

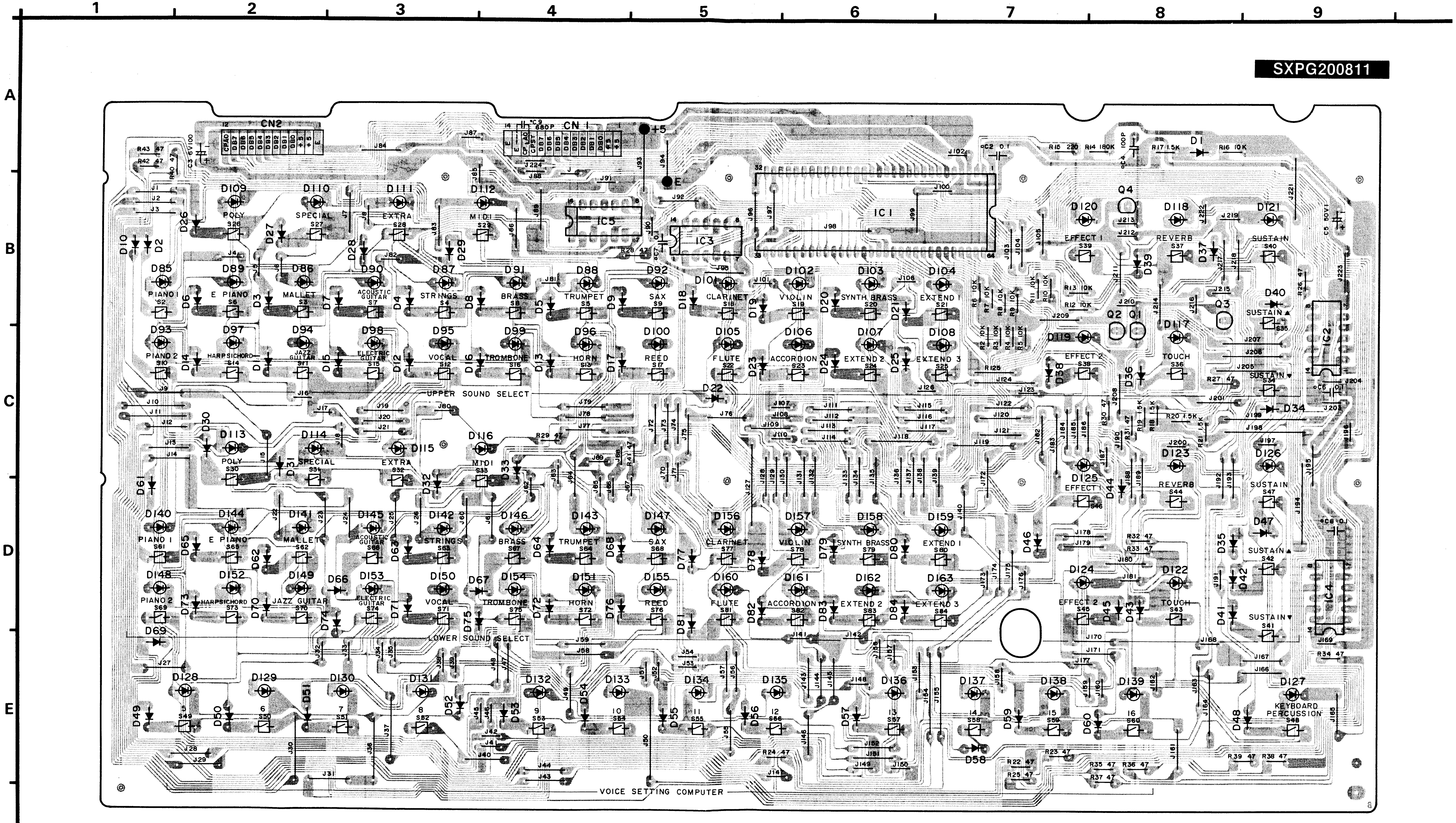
D1~62:	MA165TA5
D63~73, 75~79, 85, 86:	LN282R
D74, 80~84:	LN382G

CPC

UPPER CONTROL PANEL CENTER CIRCUIT DIAGRAM


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
IC1
Gate Array
Z1 (10K×8)
VDD
VSS
CS0
CS1
CK1
CK0
RST
C2 0.1
C3 6V100
CN2
CN1
CPR
CPL
+5
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
CPST
CPA0
E
LCVIN
+15
Power Supply
Data Bus
STR
A0
DI0
DI1
DI2
DI3
DI4
DI5
DI6
DI7
RD0
RD10
TS0
TS1
TS2
TS3
DO0
DO21
MUSICAL DIRECTOR
START/STOP
SYNCHRO & BREAK
DRUMS
INTRO & ENDING
FILL IN 1
FILL IN 2
UPPER ORCHESTRAL CONDUCTOR
POLY
SPECIAL
EXTRA
MIDI
TAB & ORGAN
MEMORY
POLY VOLUME ▼
POLY VOLUME ▲
SPECIAL VOLUME ▼
SPECIAL VOLUME ▲
EXTRA VOLUME ▼
EXTRA VOLUME ▲
MIDI VOLUME ▼
MIDI VOLUME ▲
TAB & ORGAN VOLUME ▼
TAB & ORGAN VOLUME ▲
U. SOUND SELECT
LOWER ORCHESTRAL CONDUCTOR
L. SOUND SELECT
SET
VOICE SETTING COMPUTER
TREMORO SLOW/FAST
TECHNICHORD
R10 10K
R11 10K
R12 10K
R13 10K
Q1
Q2
Q3
Q4
R18 1.5K
R19 1.5K
R20 1.5K
R21 1.5K
R38 2.2K
VR1 10KB
R40 10K
R39 47K
LCD CONTRAST
R14 180K
R15 220
C4 100P
R16 10K
D1
R17 1.5K
C5 50V1
IC2
R26 47
R27 47
R28 47
R29 47
R32 47
R33 47
R34 47
R35 47
C6 0.1
Q5
Q6

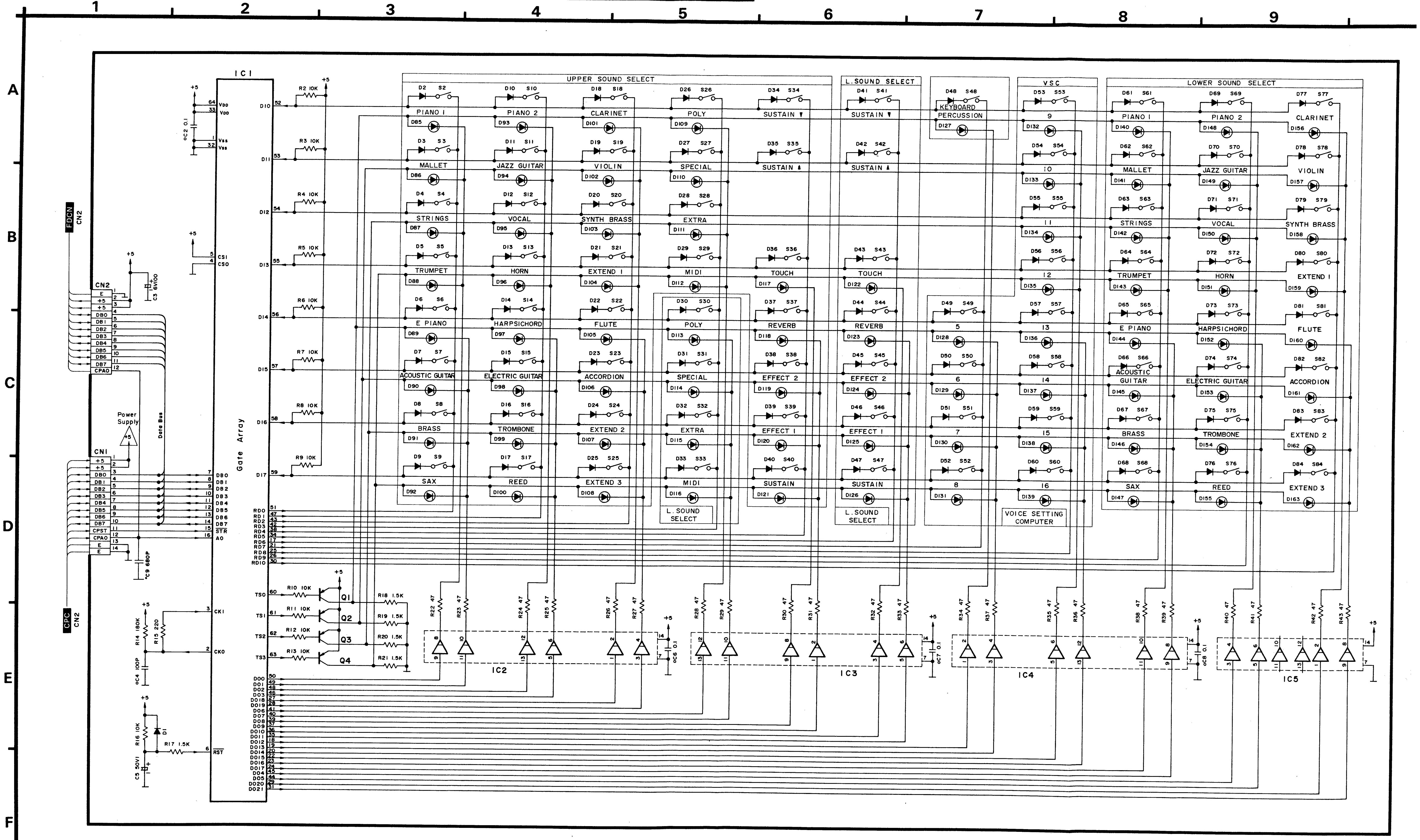
CPR UPPER CONTROL PANEL RIGHT CIRCUIT BOARD


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
SXPG200811
CN2
CN1
+5
E
IC1
IC2
IC3
IC4
IC5
Q1
Q2
Q3
Q4
POLY
SPECIAL
EXTRA
MIDI
PIANO 1
E PIANO
MALLET
ACOUSTIC GUITAR
STRINGS
BRASS
TRUMPET
SAX
CLARINET
VIOLIN
SYNTH BRASS
EXTEND 1
PIANO 2
HARPSICHORD
JAZZ GUITAR
ELECTRIC GUITAR
VOCAL
TROMBONE
HORN
REED
FLUTE
ACCORDION
EXTEND 2
EXTEND 3
UPPER SOUND SELECT
LOWER SOUND SELECT
EFFECT 1
EFFECT 2
REVERB
SUSTAIN
SUSTAIN ▲
SUSTAIN ▼
TOUCH
KEYBOARD PERCUSSION
VOICE SETTING COMPUTER
R43 47
R42 47
C3 6V100
C9 680P
C2 0.1
R15 220
R14 180K
100P
R17 1.5K
R16 10K
C5 50V1
R13 10K
R12 10K
R26 47
R27 47
R20 1.5K
R29 47
R28 47
R32 47
R33 47
R34 47
R24 47
R22 47
R23 47
R25 47
R35 47
R36 47
R37 47
R39 47
R38 47
R125

NOTES:

• IC'S	
IC1:	SVIGM603A121
IC2∼5:	SVIGM74LS07
• TRANSISTORS	
Q1∼4:	2SA830SB
• DIODES	
D1∼84:	MA165TA5
D85∼108, 140∼163:	SEL2210SM
D109∼127:	LN282R
D128∼139:	LN382G

CPR UPPER CONTROL PANEL RIGHT CIRCUIT DIAGRAM


UPPER SOUND SELECT
L. SOUND SELECT
KEYBOARD PERCUSSION
VSC
LOWER SOUND SELECT
VOICE SETTING COMPUTER
IC1
Gate Array
IC2
IC3
IC4
IC5
Q1
Q2
Q3
Q4
CN1
CN2
FDCN CN2
CPC CN2
Power Supply
Data Bus
PIANO 1
PIANO 2
CLARINET
POLY
SUSTAIN
MALLET
JAZZ GUITAR
VIOLIN
SPECIAL
STRINGS
VOCAL
SYNTH BRASS
EXTRA
TRUMPET
HORN
EXTEND 1
MIDI
TOUCH
E PIANO
HARPSICHORD
FLUTE
REVERB
ACOUSTIC GUITAR
ELECTRIC GUITAR
ACCORDION
EFFECT 2
BRASS
TROMBONE
EXTEND 2
EFFECT 1
SAX
REED
EXTEND 3
A
B
C
D
E
F
1
2
3
4
5
6
7
8
9

NOTES:

- IC'S
  - IC1: SVIGM603A121
  - IC2~5: SVIGM74LS07
- TRANSISTORS
  - Q1~4: 2SA830SB

- DIODES
  - D1~84: MA165TA5
  - D85~108, 140~163: SEL2210SM
  - D109~127: LN282R
  - D128~139: LN382G

REPLACEMENT PARTS LIST......P.C.B. and Wiring Parts

Notes:

1. Printed circuit board assembly with mark (NLA) is no longer available after production discontinuation of the complete set.
2. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The "S" mark is service standard parts and may differ from production parts.
4. ○ mark are new parts.
5. For part No. with area mark, check the area when placing an order.

■ PRINTED CIRCUIT BOARD

	NLA	Area	Part No.	Description	Per/Set
○	NLA	EZ MC XL	SXPG200151	MAIN	1
○	NLA	Others	SXPG200111	MAIN	1
○	NLA		SXPG201411	JACK	1
○	NLA		SXPG200711E	MVOL	1
	NLA		SXPG145911	BEND	1
○	NLA		SXPG200711D	FDCN	1
○	NLA		SXPG200211	SG	1
○	NLA	EZ MC XL	SXPG200331	EJ	1
○	NLA	Others	SXPG200311	EJ	1
○	NLA		SXPG202411	EXPC	1
○	NLA		SXPG201611	DEF	1
○	NLA		SXPG146021	DRV	1
○	NLA		SXPG200911	MKB1	2
○	NLA		SXPG201011	MKB2	2
○	NLA		SXPG201211	PKB	1
	NLA		SXPG103211	EXP	1
○	NLA	N	S0PG201511A	ACP	1
○	NLA	M MC	S0PG201561A	ACP	1
○	NLA	EK XL XR XD XS X	S0PG201531A	ACP	1
○	NLA	Others	S0PG201521A	ACP	1
○	NLA	M MC	SXPG201521B	PSS	1
○	NLA	Others	SXPG201511B	PSS	1
○	NLA		SXPG201511C	PSM	1
○	NLA		SXPG139261	PA	1
○	NLA		SXPG200711B	CN	1
	NLA		SXPG146111	FDC	1
○	NLA		SXPG200611	CPL	1
○	NLA		SXPG200711C	ESW	1
○	NLA		SXPG200511	CPSL	1
○	NLA		SXPG200711A	CPC	1
○	NLA		QSLG001AA	LCD	1
○	NLA		SXPG200811	CPR	1

MAIN MAIN CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
	INTEGRATED CIRCUITS			
	IC1	SVIGD70320GJ	16 bit Microcomputer	1
	IC2	SVIGMB621407	Gate Array	1
	IC3	SVIGD656C329	Gate Array	1
	IC4	SVIGLH701088	16 bit Microcomputer	1
○	IC5	QSIGAGN9BX0	1M bit EP ROM	1
○	IC6	QSIGAGN9AX0	1M bit EP ROM	1
○	IC7	HM658128P12	1M bit Partial S RAM	1
	IC8	SVIGM5256BLL	256K bit S RAM	1
○	IC9	QSIGU3C04742	4M bit Mask ROM	1
○	IC10	M74HC245P	3-State Buffer	1
	IC11~13	SVIGM74HC244	3-State Buffer	3
○	IC14	QSIGAGN9CX0	1M bit EP ROM	1
	IC15	SVIGHM65256	256K bit Partial S RAM	1
	IC16	SVIGTLP513	Photo Coupler	1
	IC17	SVIGM74LS07	Hex Buffers (O.C.)	1
	IC18	SVIGMSM6253	A/D Converter	1
	IC19	SVIGM74H138	Decoder	1
○	IC20	M74HC139P	Decoder	1
	IC21	SVIGM74H02	Quad 2-input NOR Gates	1
	IC22, 26, 30, 34, 38	MN6635	Tone Generator LSI	5
	IC23, 27, 31, 35, 39	SVIGBA9221	12 bit D-A Converter	5
	IC24, 28, 32, 36, 40	SVIGM5238L	Operational Amplifier	5
	IC25, 29, 33, 37, 41	SVIGTC4051BP	8-channel Multiplexer	5
○	IC42	QSIGU3C04733	4M bit Mask ROM	1
○	IC43	QSIGU3C04738	4M bit Mask ROM	1
○	IC45	QSIGU3C04724	4M bit Mask ROM	1
○	IC46	QSIGU3C04726	4M bit Mask ROM	1
○	IC47	QSIGU3C04730	4M bit Mask ROM	1
	IC48, 49, 100	SVIGM74HC374	3-state D-type Flip-Flops	3
	IC50~89	SVIGM74H4066	Quad Bilateral Switches	40
	IC90, 91, 93, 94, 96~98, 101, 104, 111	SVIGM5218L	Operational Amplifier	10
○	IC99	M74HC174P	Hex D-type Flip-Flops	1
○	IC102	QSIGU3C04725	4M bit Mask ROM	1
○	IC103	QSIGU3C04731	4M bit Mask ROM	1
	IC108	SVIGM74H00	Quad 2-input NAND Gates	1
	IC109	SVIGM74H32	Quad 2-input OR Gates	1
○	IC110	QSIGU3C04734	4M bit Mask ROM	1
	TRANSISTORS			
	Q2~4, 16	2SC1047C		4
	Q6~15	2SJ105GR	FET	10
	DIODES			
	D1~11, 13~16	MA165TA5		15
○	D12	MA4056	Zener, 5.6V	1
	OSCILLATORS			
○	X1	QSXG1B1400A	14MHz, Quartz Oscillator	1
	X2	SVQGA16MX140	16MHz, Ceramic Oscillator	1
	X3~5	SVQG49S1600T	16MHz, Quartz Oscillator	3
	COMPONENT COMBINATIONS			
	Z1, 4, 9, 10	EXBPI8472JM	4.7KΩ×8	4
	Z2	EXBPI4472JM	4.7KΩ×4	1
	Z3, 5~8	EXAMR14A1002	1KΩ/2KΩ, Ladder Network	5
	JACKS			
	JK1~3	SJSG1370A	MIDI (THRU, OUT, IN)	3
	RESISTORS			
	R1, 2	ERDS2TJ473	47KΩ	2
	R3, 4	ERDS2TJ474	470KΩ	2
	R6	ERDS2TJ221	220Ω	1

Ref. No.	Part No.	Description	Per/Set
R7	ERDS2TJ331	330Ω	1
R9, 10	ERDS2TJ221	220Ω	2
R11	ERDS2TJ472	4.7KΩ	1
R12, 13	ERDS2TJ221	220Ω	2
R15	ERDS2TJ103	10KΩ	1
R16	ERDS2TJ332	3.3KΩ	1
R26	ERDS2TJ472	4.7KΩ	1
R28~31	ERDS2TJ472	4.7KΩ	4
R32	ERDS2TJ331	330Ω	1
R41	ERDS2TJ154	150KΩ	1
R42, 43	ERDS2TJ101	100Ω	2
R45, 46	ERDS2TJ472	4.7KΩ	2
R52	ERDS2TJ682	6.8KΩ	1
R54	ERDS2TJ682	6.8KΩ	1
R56	ERDS2TJ103	10KΩ	1
R57, 58	ERDS2TJ472	4.7KΩ	2
R59	ERDS2TJ105	1MΩ	1
R60~62	ERDS2TJ472	4.7KΩ	3
R63, 64	ERDS2TJ473	47KΩ	2
R65, 66	ERDS2TJ472	4.7KΩ	2
R67 ⚠	ERQ14AJ2R0P	2Ω, 1/4W, Fuse Type	1
R69	ERDS2TJ101	100Ω	1
R82	ERDS2TJ473	47KΩ	1
R83	ERDS2TJ472	4.7KΩ	1
R85, 86	ERDS2TJ471	470Ω	2
R87	ERDS2TJ183	18KΩ	1
R88	ERDS2TJ333	33KΩ	1
R89, 90	ER0S2TKF4700	470Ω, ±1%	2
R91, 92	ERDS2TJ471	470Ω	2
R93	ERDS2TJ333	33KΩ	1
R94	ERDS2TJ183	18KΩ	1
R95, 96	ER0S2TKF4700	470Ω, ±1%	2
R97, 98	ERDS2TJ471	470Ω	2
R99	ERDS2TJ123	12KΩ	1
R100	ER0S2TKF4700	470Ω, ±1%	1
R101, 102	ERDS2TJ472	4.7KΩ	2
R103, 104	ERDS2TJ222	2.2KΩ	2
R105, 106	ERDS2TJ472	4.7KΩ	2
R107~114	ERDS2TJ105	1MΩ	8
R115, 116	ERDS2TJ104	100KΩ	2
R118~121	ERDS2TJ104	100KΩ	4
R123~126	ERDS2TJ225	2.2MΩ	4
R127~134	ERDS2TJ473	47KΩ	8
R135, 136	ERDS2TJ683	68KΩ	2
R137~152	ERDS2TJ473	47KΩ	16
R153	ERDS2TJ224	220KΩ	1
R154~157	ERDS2TJ334	330KΩ	4
R158	ER0S2TKF4700	470Ω, ±1%	1
R159, 160	ERDS2TJ471	470Ω	2
R161	ERDS2TJ183	18KΩ	1
R162	ERDS2TJ333	33KΩ	1
R163	ER0S2TKF4700	470Ω, ±1%	1
R164	ERDS2TJ101	100Ω	1
R165	ER0S2TKF4700	470Ω, ±1%	1
R166, 167	ERDS2TJ471	470Ω	2
R168	ERDS2TJ333	33KΩ	1
R169	ERDS2TJ183	18KΩ	1
R170	ER0S2TKF4700	470Ω, ±1%	1
R171~186	ERDS2TJ473	47KΩ	16
R187, 188	ERDS2TJ683	68KΩ	2
R193	ERDS2TJ104	100KΩ	1
R194	ERDS2TJ333	33KΩ	1
R195	ERDS2TJ104	100KΩ	1
R196	ERDS2TJ153	15KΩ	1
R197	ERDS2TJ473	47KΩ	1
R198~200	ERDS2TJ104	100KΩ	3
R201	ERDS2TJ333	33KΩ	1
R202	ERDS2TJ473	47KΩ	1
R203	ERDS2TJ153	15KΩ	1
R204~206	ERDS2TJ104	100KΩ	3
R207	ERDS2TJ333	33KΩ	1
R208	ERDS2TJ153	15KΩ	1
R209	ERDS2TJ473	47KΩ	1
R210~212	ERDS2TJ104	100KΩ	3
R213	ERDS2TJ333	33KΩ	1
R214	ERDS2TJ473	47KΩ	1
R215	ERDS2TJ153	15KΩ	1
R216~218	ERDS2TJ104	100KΩ	3
R219	ERDS2TJ333	33KΩ	1
R220	ERDS2TJ473	47KΩ	1
R221	ERDS2TJ153	15KΩ	1
R222, 223	ERDS2TJ472	4.7KΩ	2
R228, 229 ⚠	ERD2FCJ4R7	4.7Ω, 1/4W, Fuse Type	2
R230, 231 ⚠	ERQ14AJ2R0P	2Ω, 1/4W, Fuse Type	2
R239	ER0S2TKF4700	470Ω, ±1%	1
R240	ERDS2TJ104	100KΩ	1
R244	ERDS2TJ103	10KΩ	1
R245, 246	ERDS2TJ472	4.7KΩ	2
R247 ⚠	ERQ14AJ2R0P	2Ω, 1/4W, Fuse Type	1
R248	ERDS2TJ472	4.7KΩ	1
R250~254	ERDS2TJ101	100Ω	5
R256~288	ERDS2TJ101	100Ω	33
R289	ERDS2TJ103	10KΩ	1
CAPACITORS			
C1, 2	ECQG1H102KZ	0.001μF	2
C3, 4	ECKR1E473ZV	0.047μF	2
C7	ECEA1HKA010	1μF, 50V	1
C8, 9	ECCR1H220J	22pF	2
C10	ECEA0JKA331	330μF, 6.3V	1
C11, 12	ECKR1E473ZV	0.047μF	2
C13~17	ECRR1H104ZF	0.1μF	5
C18	EECF5R5U105	1F, 5.5V, Memory Back-up	1
C19	ECEA0JKA101	100μF, 6.3V	1
C20	ECCR1H470J	47pF	1
C22	ECCR1H680J	68pF	1
C23	ECRR1H104ZF	0.1μF	1
C24, 25	ECKR1E473ZV	0.047μF	2
C27, 28	ECCR1H220J	22pF	2
C29~31	ECKR1E473ZV	0.047μF	3
C32	EECF5R5U105	1F, 5.5V, Memory Back-up	1
C33	ECKR1E473ZV	0.047μF	1
C34, 35	ECSF1EE225	2.2μF, 25V	2
C36	ECCR1H221J	220pF	1
C37, 38	ECCR1H220J	22pF	2
C39	ECEA0JKA331	330μF, 6.3V	1
C40	ECRR1H104ZF	0.1μF	1
C42	ECSF1EE225	2.2μF, 25V	1
C43	ECCR1H221J	220pF	1
C44	ECEA0JKA331	330μF, 6.3V	1
C45	ECRR1H104ZF	0.1μF	1
C46	ECEA0JKA331	330μF, 6.3V	1
C47	ECSF1EE225	2.2μF, 25V	1
C48	ECSF1VE106	10μF, 35V	1
C49	ECCR1H221J	220pF	1
C50	ECEA0JKA331	330μF, 6.3V	1
C51	ECRR1H104ZF	0.1μF	1
C52	ECEA0JKA331	330μF, 6.3V	1
C53, 54	ECCR1H220J	22pF	2
C55	ECKR1E473ZV	0.047μF	1
C58~61	ECQV1H104JZ	0.1μF	4
C62	ECQG1H472KZ	0.0047μF	1
C63	ECQG1H102KZ	0.001μF	1
C64	ECQG1H472KZ	0.0047μF	1
C65	ECQG1H102KZ	0.001μF	1

Ref. No.	Part No.	Description	Per/Set
C66	ECQG1H472KZ	0.0047µF	1
C67	ECQG1H102KZ	0.001µF	1
C68	ECQG1H472KZ	0.0047µF	1
C69	ECQG1H102KZ	0.001µF	1
C70	ECQG1H472KZ	0.0047µF	1
C71	ECQG1H102KZ	0.001µF	1
C72	ECQG1H472KZ	0.0047µF	1
C73	ECQG1H102KZ	0.001µF	1
C74	ECQG1H472KZ	0.0047µF	1
C75	ECQG1H102KZ	0.001µF	1
C76	ECQG1H472KZ	0.0047µF	1
C77	ECQG1H102KZ	0.001µF	1
C78	ECEA0JKA331	330µF, 6.3V	1
C79	ECSF1EE225	2.2µF, 25V	1
C80	ECKR1E473ZV	0.047µF	1
C82	ECKR1E473ZV	0.047µF	1
C84, 85	ECKR1E473ZV	0.047µF	2
C87	ECKR1E473ZV	0.047µF	1
C88	ECCR1H470J	47pF	1
C89	ECQG1H472KZ	0.0047µF	1
C90	ECQG1H102KZ	0.001µF	1
C91	ECQG1H472KZ	0.0047µF	1
C92	ECQG1H102KZ	0.001µF	1
C93	ECQG1H472KZ	0.0047µF	1
C94	ECQG1H102KZ	0.001µF	1
C95	ECQG1H472KZ	0.0047µF	1
C96	ECQG1H102KZ	0.001µF	1
C97	ECQG1H472KZ	0.0047µF	1
C98	ECQG1H102KZ	0.001µF	1
C99	ECQG1H472KZ	0.0047µF	1
C100	ECQG1H102KZ	0.001µF	1
C101	ECQG1H472KZ	0.0047µF	1
C102	ECQG1H102KZ	0.001µF	1
C103	ECQG1H472KZ	0.0047µF	1
C104	ECQG1H102KZ	0.001µF	1
C105	ECKR1E473ZV	0.047µF	1
C107	ECKR1E473ZV	0.047µF	1
C109	ECKR1E473ZV	0.047µF	1
C111	ECKR1E473ZV	0.047µF	1
C113	ECQG1H472KZ	0.0047µF	1
C114	ECQG1H102KZ	0.001µF	1
C115	ECQG1H472KZ	0.0047µF	1
C116	ECQG1H102KZ	0.001µF	1
C117	ECQG1H472KZ	0.0047µF	1
C118	ECQG1H102KZ	0.001µF	1
C119	ECQG1H472KZ	0.0047µF	1
C120	ECQG1H102KZ	0.001µF	1
C121	ECQG1H472KZ	0.0047µF	1
C122	ECQG1H102KZ	0.001µF	1
C123	ECQG1H472KZ	0.0047µF	1
C124	ECQG1H102KZ	0.001µF	1
C125	ECQG1H472KZ	0.0047µF	1
C126	ECQG1H102KZ	0.001µF	1
C127	ECQG1H472KZ	0.0047µF	1
C128	ECQG1H102KZ	0.001µF	1
C129	ECKR1E473ZV	0.047µF	1
C131	ECKR1E473ZV	0.047µF	1
C133	ECKR1E473ZV	0.047µF	1
C135, 136	ECKR1E473ZV	0.047µF	2
C137	ECSF1VE106	10µF, 35V	1
C138	ECQV1H104JZ	0.1µF	1
C140, 141	ECQV1H104JZ	0.1µF	2
C142	ECCR1H471J	470pF	1
C143	ECCR1H470J	47pF	1
C144	ECCR1H471J	470pF	1
C145	ECCR1H470J	47pF	1
C146, 147	ECSF1EE225	2.2µF, 25V	2
C149	ECCR1H221J	220pF	1

Ref. No.	Part No.	Description	Per/Set
C150, 151	ECEA0JKA331	330µF, 6.3V	2
C152, 153	ECCR1H220J	22pF	2
C154	ECSF1EE225	2.2µF, 25V	1
C155	ECCR1H221J	220pF	1
C156, 157	ECEA0JKA331	330µF, 6.3V	2
C158	ECQG1H472KZ	0.0047µF	1
C159	ECQG1H102KZ	0.001µF	1
C160	ECQG1H472KZ	0.0047µF	1
C161	ECQG1H102KZ	0.001µF	1
C162	ECQG1H472KZ	0.0047µF	1
C163	ECQG1H102KZ	0.001µF	1
C164	ECQG1H472KZ	0.0047µF	1
C165	ECQG1H102KZ	0.001µF	1
C166	ECQG1H472KZ	0.0047µF	1
C167	ECQG1H102KZ	0.001µF	1
C168	ECQG1H472KZ	0.0047µF	1
C169	ECQG1H102KZ	0.001µF	1
C170	ECQG1H472KZ	0.0047µF	1
C171	ECQG1H102KZ	0.001µF	1
C172	ECQG1H472KZ	0.0047µF	1
C173	ECQG1H102KZ	0.001µF	1
C174	ECKR1E473ZV	0.047µF	1
C176	ECKR1E473ZV	0.047µF	1
C178	ECKR1E473ZV	0.047µF	1
C180	ECKR1E473ZV	0.047µF	1
C181	ECQG1H472KZ	0.0047µF	1
C182	ECQG1H102KZ	0.001µF	1
C183	ECQG1H472KZ	0.0047µF	1
C184	ECQG1H102KZ	0.001µF	1
C185	ECQG1H472KZ	0.0047µF	1
C186	ECQG1H102KZ	0.001µF	1
C188	ECQG1H472KZ	0.0047µF	1
C189	ECQG1H102KZ	0.001µF	1
C190	ECQG1H472KZ	0.0047µF	1
C191	ECQG1H102KZ	0.001µF	1
C192	ECQG1H472KZ	0.0047µF	1
C193	ECQG1H102KZ	0.001µF	1
C194	ECQG1H472KZ	0.0047µF	1
C195	ECQG1H102KZ	0.001µF	1
C196	ECQG1H472KZ	0.0047µF	1
C197	ECQG1H102KZ	0.001µF	1
C198	ECKR1E473ZV	0.047µF	1
C200	ECKR1E473ZV	0.047µF	1
C202	ECKR1E473ZV	0.047µF	1
C204	ECKR1E473ZV	0.047µF	1
C205	ECSF1EE225	2.2µF, 25V	1
C206	ECQG1H152KZ	0.0015µF	1
C207, 208	ECKR1E473ZV	0.047µF	2
C209	ECQG1H332KZ	0.0033µF	1
C210	ECCR1H470J	47pF	1
C211	ECQG1H152KZ	0.0015µF	1
C212, 213	ECKR1E473ZV	0.047µF	2
C214	ECQG1H332KZ	0.0033µF	1
C215	ECCR1H470J	47pF	1
C216	ECQG1H332KZ	0.0033µF	1
C217	ECKR1E473ZV	0.047µF	1
C218	ECQG1H682KZ	0.0068µF	1
C219	ECKR1E473ZV	0.047µF	1
C220	ECCR1H470J	47pF	1
C221	ECQG1H152KZ	0.0015µF	1
C222	ECKR1E473ZV	0.047µF	1
C223	ECQG1H332KZ	0.0033µF	1
C224	ECKR1E473ZV	0.047µF	1
C225	ECCR1H470J	47pF	1
C226	ECQG1H152KZ	0.0015µF	1
C227	ECKR1E473ZV	0.047µF	1
C228	ECQG1H332KZ	0.0033µF	1
C229	ECKR1E473ZV	0.047µF	1

Ref. No.	Part No.	Description	Per/Set
C230	ECEA0JKA101	100µF, 6.3V	1
C234	ECEA0JKA331	330µF, 6.3V	1
C235, 236	ECEA1CKA101	100µF, 16V	2
C237	ECEA0JKA331	330µF, 6.3V	1
C239	ECQV1H104JZ	0.1µF	1
C241	ECQV1H104JZ	0.1µF	1
C245	ECCR1H101J	100pF	1
C246	ECQV1H474JZ	0.47µF	1
C247	ECKR1E473ZV	0.047µF	1
C248	ECSF1EE225	2.2µF, 25V	1
C250, 251	ECKR1E473ZV	0.047µF	2
C254	ECSF1EE225	2.2µF, 25V	1
C256	ECSF1EE225	2.2µF, 25V	1
C257	ECKR1E473ZV	0.047µF	1
C258	ECRR1H104ZF	0.1µF	1
C259	ECSF1EE225	2.2µF, 25V	1
C261	ECKR1E473ZV	0.047µF	1
C262	ECRR1H104ZF	0.1µF	1
C264~273	ECKR1E473ZV	0.047µF	10
C276, 277	ECKR1E473ZV	0.047µF	2
C279	ECKR1E473ZV	0.047µF	1
C281~284	ECKR1E473ZV	0.047µF	4
C285	ECQG1H102KZ	0.001µF	1
C286~288	ECKR1E473ZV	0.047µF	3
C289	ECCR1H331J	330pF	1
C291	ECKR1E473ZV	0.047µF	1
C292	ECRR1H104ZF	0.1µF	1
C293	ECSF1EE225	2.2µF, 25V	1
C294	ECRR1H104ZF	0.1µF	1
C295, 296	ECKR1E473ZV	0.047µF	2
C297, 298	ECRR1H104ZF	0.1µF	2

JACK JACK CIRCUIT

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUIT			
IC1	SVIGM5218L	Operational Amplifier	1
JACKS			
JK1, 2	SJJG470A	Line Out (R, L)	1
JK3	SJJG210A	Microphone	1
JK4	SJJG100A	Headphones	1
VARIABLE RESISTOR			
VR1	EWHD5A576A54	50KΩ A, Mic Volume	1
RESISTORS			
R1, 2 ⚠	ERD2FCG100	10Ω, 1/4W, Fuse Type	2
R3	ERDS2TJ222	2.2KΩ	1
R4	ERDS2TJ472	4.7KΩ	1
R5	ERDS2TJ102	1KΩ	1
R6	ERDS2TJ222	2.2KΩ	1
R7	ERDS2TJ102	1KΩ	1
R8	ERDS2TJ472	4.7KΩ	1
R9	ERDS2TJ224	220KΩ	1
R10	ERDS2TJ103	10KΩ	1
R11	ERDS2TJ224	220KΩ	1
R12	ERDS2TJ103	10KΩ	1
R13	ERDS2TJ154	150KΩ	1
R14	ERDS2TJ102	1KΩ	1
R15, 16 ⚠	ERG1ANJP680S	68Ω, 1W, Flame-Proof	2
R18, 19	ERDS2TJ332	3.3KΩ	2

Ref. No.	Part No.	Description	Per/Set
CAPACITORS			
C1, 2	ECEA1EKA470	47µF, 25V	2
C3, 8	ECEA1HKN010	1µF, 50V	2
C4, 5	ECCR1H101J	100pF	2
C6, 7	ECKR1E473ZV	0.047µF	2

MVOL MAIN VOLUME CIRCUIT

Ref. No.	Part No.	Description	Per/Set
VARIABLE RESISTOR			
VR1	EVD06510B24G	20KΩ B, Main Volume	1
CAPACITOR			
C1	ECKR1E473ZV	0.047µF	1

BEND PITCH BEND CIRCUIT

Ref. No.	Part No.	Description	Per/Set
SWITCHES			
○ S1, 2	SSHG1053A	Push Switch	2
VARIABLE RESISTOR			
VR1	EVH07323B54G	50KΩ B, Pitch Bend	1
RESISTORS			
R1, 2	ER0S2CKF1001	1KΩ, ±1%	2

SG SOUND GENERATOR CIRCUIT

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
○ IC1, 30	QSIGU3C04727	4M bit Mask ROM	2
○ IC2, 31	QSIGU3C04728	4M bit Mask ROM	2
IC3, 18, 32	MN6635	Tone Generator LSI	3
IC4, 19, 33	SVIGBA9221	12 bit D-A Converter	3
IC5, 20, 34	SVIGM5238L	Operational Amplifier	3
IC6, 21, 35	SVIGTC4051BP	8-channel Multiplexer	3
IC7~11, 13~15, 22~29, 36~43	SVIGM74H4066	Quad Bilateral Switches	24
IC16, 44, 45, 47, 48	SVIGM5218L	Operational Amplifier	5
○ IC17	QSIGU3C04729	4M bit Mask ROM	1
○ IC46	M74HC137P	Decoder	1
○ IC49	M74HC174P	Hex D-type Flip-Flops	1
TRANSISTORS			
Q2~5	2SJ105GR	FET	4
OSCILLATORS			
X1, 2	SVQG49S1600T	16MHz, Quartz Oscillator	2

Ref. No.	Part No.	Description	Per/Set
COMPONENT COMBINATIONS			
Z1~3	EXAMR14A1002	1KΩ/2KΩ, Ladder Network	3
RESISTORS			
R4, 5	ERDS2TJ471	470Ω	2
R6	ERDS2TJ333	33KΩ	1
R7	ERDS2TJ183	18KΩ	1
R8	ER0S2TKF4700	470Ω, ±1%	1
R9~16	ERDS2TJ473	47KΩ	8
R17	ERDS2TJ683	68KΩ	1
R18, 19	ERDS2TJ471	470Ω	2
R20	ERDS2TJ123	12KΩ	1
R21, 22	ER0S2TKF4700	470Ω, ±1%	2
R23~30	ERDS2TJ473	47KΩ	8
R31~34	ERDS2TJ683	68KΩ	4
R35, 36	ER0S2TKF4700	470Ω, ±1%	2
R37, 38	ERDS2TJ471	470Ω	2
R39	ERDS2TJ183	18KΩ	1
R40~47	ERDS2TJ473	47KΩ	8
R48	ERDS2TJ683	68KΩ	1
R49, 50	ERDS2TJ472	4.7KΩ	2
R51, 52 ⚠	ERD2FCJ4R7	4.7Ω, 1/4W, Fuse Type	2
R53 ⚠	ERQ14AJ2R0P	2Ω, 1/4W, Fuse Type	1
R54	ERDS2TJ101	100Ω	1
R55	ER0S2TKF4700	470Ω, ±1%	1
R56~61	ERDS2TJ105	1MΩ	6
R62	ERDS2TJ225	2.2MΩ	1
R64	ERDS2TJ225	2.2MΩ	1
R66~68	ERDS2TJ104	100KΩ	3
R69	ERDS2TJ333	33KΩ	1
R70	ERDS2TJ473	47KΩ	1
R71	ERDS2TJ153	15KΩ	1
R72~74	ERDS2TJ104	100KΩ	3
R75	ERDS2TJ333	33KΩ	1
R76	ERDS2TJ473	47KΩ	1
R77	ERDS2TJ153	15KΩ	1
R78	ERDS2TJ333	33KΩ	1
R79, 80	ERDS2TJ221	220Ω	2
CAPACITORS			
C2	ECKR1E473ZV	0.047μF	1
C3, 4	ECCR1H220J	22pF	2
C5	ECRR1H104ZF	0.1μF	1
C6	ECCR1H221J	220pF	1
C7, 8	ECEA0JKA331	330μF, 6.3V	2
C9~16	ECQG1H472KZ	0.0047μF	8
C17~24	ECQG1H102KZ	0.001μF	8
C25, 26	ECCR1H220J	22pF	2
C28	ECRR1H104ZF	0.1μF	1
C29	ECCR1H221J	220pF	1
C30, 31	ECEA0JKA331	330μF, 6.3V	2
C32~39	ECQG1H472KZ	0.0047μF	8
C40~47	ECQG1H102KZ	0.001μF	8
C48	ECQG1H222KZ	0.0022μF	1
C49	ECCR1H331J	330pF	1
C50	ECQG1H222KZ	0.0022μF	1
C51	ECCR1H331J	330pF	1
C52	ECRR1H104ZF	0.1μF	1
C53	ECCR1H221J	220pF	1
C54, 55	ECEA0JKA331	330μF, 6.3V	2
C56~63	ECQG1H472KZ	0.0047μF	8
C64~71	ECQG1H102KZ	0.001μF	8
C73	ECQV1H104JZ	0.1μF	1
C74	ECEA0JKA101	100μF, 6.3V	1
C75, 76	ECEA1CKA101	100μF, 16V	2
C77	ECEA0JKA101	100μF, 6.3V	1
C79	ECCR1H101J	100pF	1
C80	ECKR1E473ZV	0.047μF	1
C81	ECQV1H104JZ	0.1μF	1
C82	ECKR1E473ZV	0.047μF	1
C84	ECKR1E473ZV	0.047μF	1
C86	ECKR1E473ZV	0.047μF	1
C88, 89	ECKR1E473ZV	0.047μF	2
C91	ECKR1E473ZV	0.047μF	1
C93	ECKR1E473ZV	0.047μF	1
C95, 96	ECKR1E473ZV	0.047μF	2
C98	ECKR1E473ZV	0.047μF	1
C100	ECKR1E473ZV	0.047μF	1
C102	ECKR1E473ZV	0.047μF	1
C106~109	ECRR1H104ZF	0.1μF	12
C110	ECKR1E473ZV	0.047μF	1
C111, 112	ECRR1H104ZF	0.1μF	2
C113	ECKR1E473ZV	0.047μF	1
C114, 115	ECRR1H104ZF	0.1μF	2
C116, 117	ECKR1E473ZV	0.047μF	2
C118, 119	ECQV1H104JZ	0.1μF	2
C120	ECCR1H470J	47pF	1
C121, 122	ECKR1E473ZV	0.047μF	2
C123	ECQG1H152KZ	0.0015μF	1
C124	ECQG1H332KZ	0.0033μF	1
C125, 126	ECKR1E473ZV	0.047μF	2
C127	ECCR1H470J	47pF	1
C128	ECQG1H152KZ	0.0015μF	1
C129	ECQG1H332KZ	0.0033μF	1
C130~134	ECKR1E473ZV	0.047μF	5
C135	ECEA0JKA101	100μF, 6.3V	1
C136, 137	ECRR1H104ZF	0.1μF	2
C138, 139	ECQM1H103KV	0.01μF	2

EJ EFFECT, MIXING & JACK CIRCUIT

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1, 2	SVIG65002018	Gate Array	2
○ IC3	M66240P	PWM Generator	1
IC4, 12	SVIGTC4051BP	8-channel Multiplexer	2
IC5~7, 13~15, 45, 46, 60, 61, 72	SVIGTC4053BP	2-channel Multiplexer	11
IC8~11, 16, 17, 22, 25, 26, 30, 37, 40~42, 47~57, 59, 69, 70, 73, 74	SVIGM5218L	Operational Amplifier	30
IC18, 19, 31, 33, 38	SVIGMSM4011	2-input NAND Gate	5
IC20, 21	MN3006	BBD (128 stages)	2
IC23, 27, 29, 34, 36, 75	SVIGUPC1252H	VCA	6
IC24, 28	SVIGUPC1253H	RMS Level Sensor	2
IC32, 35, 39	MN3004	BBD (512 stages)	3
IC43, 44	SVIGLM1894N	Dynamic Noise Reduction	2
IC58, 62~64	SVIGM5238L	Operational Amplifier	4
IC65, 66	SVIGBA6110	VCA	2
IC67, 68	SVIGM74H02	Quad 2-input NOR Gates	2

	Ref. No.	Part No.	Description	Per/Set
	TRANSISTORS			
	Q1, 2, 19~27	2SJ105GR	FET	11
S	Q3, 5, 7, 10, 11~18, 28, 31	2SC2320LFG	2SC1310FG (SUB. Part)	14
S	Q4, 6, 8, 9, 32, 33	2SA1015-GR	2SA933STRS (SUB. Part)	6
	Q29, 30	2SC3940ARS		2
	Q34, 35	2SA1534ARS		2
	DIODES			
	D1, 3, 5~21	MA165TA5		19
	D2	MA4062	Zener, 6.2V	1
	D4	SVDGRK14S		1
	OSCILLATOR			
	X1	SVQG49S1200T	12MHz, Quartz Oscillator	1
	JACKS			
	JK1~8	SJJG400A	SEPARATED LINE OUT, LINE OUT, AUX IN	8
	SWITCHES			
	S1, 3	SSSG2002A	Slide Switch	2
	SEMI-FIXED RESISTORS			
	VR1, 2	EVSG0E1B223A	22KΩ B, BBD Bias	2
	RESISTORS			
	R1	ERDS2TJ472	4.7KΩ	1
	R2	ERDS2TJ473	47KΩ	1
	R3	ERDS2TJ333	33KΩ	1
	R4	ERDS2TJ472	4.7KΩ	1
	R5	ERDS2TJ473	47KΩ	1
	R6	ERDS2TJ333	33KΩ	1
	R7	ERDS2TJ472	4.7KΩ	1
	R8	ERDS2TJ473	47KΩ	1
	R9	ERDS2TJ333	33KΩ	1
	R10	ERDS2TJ472	4.7KΩ	1
	R11	ERDS2TJ473	47KΩ	1
	R12	ERDS2TJ333	33KΩ	1
	R13	ERDS2TJ472	4.7KΩ	1
	R14	ERDS2TJ473	47KΩ	1
	R15	ERDS2TJ333	33KΩ	1
	R16	ERDS2TJ472	4.7KΩ	1
	R17	ERDS2TJ473	47KΩ	1
	R18	ERDS2TJ333	33KΩ	1
	R20~24	ERDS2TJ102	1KΩ	5
	R25	ERDS2TJ823	82KΩ	1
	R26	ERDS2TJ473	47KΩ	1
	R31	ERDS2TJ101	100Ω	1
	R32	ERDS2TJ103	10KΩ	1
	R33	ERDS2TJ563	56KΩ	1
	R34	ERDS2TJ103	10KΩ	1
	R35	ERDS2TJ682	6.8KΩ	1
	R36	ERDS2TJ332	3.3KΩ	1
	R37	ERDS2TJ103	10KΩ	1
	R38	ERDS2TJ563	56KΩ	1
	R39	ERDS2TJ103	10KΩ	1
	R40	ERDS2TJ682	6.8KΩ	1
	R41	ERDS2TJ332	3.3KΩ	1
	R42	ERDS2TJ103	10KΩ	1
	R43	ERDS2TJ563	56KΩ	1
	R44	ERDS2TJ103	10KΩ	1
	R45	ERDS2TJ682	6.8KΩ	1
	R46	ERDS2TJ332	3.3KΩ	1
	R47	ERDS2TJ103	10KΩ	1
	R48	ERDS2TJ563	56KΩ	1
	R49	ERDS2TJ103	10KΩ	1
	R50	ERDS2TJ682	6.8KΩ	1
	R51	ERDS2TJ332	3.3KΩ	1
	R52	ERDS2TJ103	10KΩ	1
	R53	ERDS2TJ563	56KΩ	1
	R54, 55	ERDS2TJ103	10KΩ	2
	R56	ERDS2TJ102	1KΩ	1
	R57	ERDS2TJ103	10KΩ	1
	R58	ERDS2TJ563	56KΩ	1
	R59, 60	ERDS2TJ103	10KΩ	2
	R61	ERDS2TJ102	1KΩ	1
	R62	ERDS2TJ103	10KΩ	1
	R63	ERDS2TJ563	56KΩ	1
	R64, 65	ERDS2TJ103	10KΩ	2
	R66	ERDS2TJ102	1KΩ	1
	R67	ERDS2TJ103	10KΩ	1
	R68	ERDS2TJ563	56KΩ	1
	R69, 70	ERDS2TJ103	10KΩ	2
	R71	ERDS2TJ332	3.3KΩ	1
	R72	ERDS2TJ101	100Ω	1
	R73, 74	ERDS2TJ104	100KΩ	2
	R75	ERDS2TJ393	39KΩ	1
	R76	ERDS2TJ223	22KΩ	1
	R77	ERDS2TJ333	33KΩ	1
	R78	ERDS2TJ104	100KΩ	1
	R79	ERDS2TJ154	150KΩ	1
	R80	ERDS2TJ103	10KΩ	1
	R81	ERDS2TJ154	150KΩ	1
	R82	ERDS2TJ104	100KΩ	1
	R83, 84	ERDS2TJ473	47KΩ	2
	R85	ERDS2TJ333	33KΩ	1
	R86	ERDS2TJ683	68KΩ	1
	R87	ERDS2TJ333	33KΩ	1
	R88	ERDS2TJ683	68KΩ	1
	R89	ERDS2TJ104	100KΩ	1
	R90	ERDS2TJ473	47KΩ	1
	R91	ERDS2TJ103	10KΩ	1
	R92	ERDS2TJ154	150KΩ	1
	R93, 94	ERDS2TJ332	3.3KΩ	2
	R95	ERDS2TJ154	150KΩ	1
	R96, 97	ERDS2TJ104	100KΩ	2
	R98	ERDS2TJ333	33KΩ	1
	R99	ERDS2TJ223	22KΩ	1
	R100	ERDS2TJ273	27KΩ	1
	R101	ERDS2TJ104	100KΩ	1
	R102	ERDS2TJ103	10KΩ	1
	R103	ERDS2TJ154	150KΩ	1
	R104	ERDS2TJ104	100KΩ	1
	R105	ERDS2TJ154	150KΩ	1
	R106	ERDS2TJ103	10KΩ	1
	R107	ERDS2TJ472	4.7KΩ	1
	R108	ERDS2TJ223	22KΩ	1
	R109	ERDS2TJ154	150KΩ	1
	R110, 111	ERDS2TJ332	3.3KΩ	2
	R112	ERDS2TJ154	150KΩ	1
	R113, 114 ⚠	ERD2FCJ4R7	4.7Ω, 1/4W, Fuse Type	2
	R115, 116	ERDS2TJ102	1KΩ	2
	R117 ⚠	ERD2FCJ4R7	4.7Ω, 1/4W, Fuse Type	1
	R118, 119	ERDS2TJ102	1KΩ	2
	R120, 121	ERDS2TJ473	47KΩ	2
	R122~124	ERDS2TJ223	22KΩ	3
	R125	ERDS2TJ154	150KΩ	1
	R126	ERDS2TJ153	15KΩ	1

Ref. No.	Part No.	Description	Per/Set
R127	ERDS2TJ103	10KΩ	1
R128	ERDS2TJ333	33KΩ	1
R129 ⚠	ERD2FCG220	22Ω, 1/4W, Fuse Type	1
R130, 131	ERDS2TJ333	33KΩ	2
R132	ERDS2TJ154	150KΩ	1
R133	ERDS2TJ153	15KΩ	1
R134	ERDS2TJ103	10KΩ	1
R135	ERDS2TJ333	33KΩ	1
R136 ⚠	ERD2FCG220	22Ω, 1/4W, Fuse Type	1
R137, 138	ERDS2TJ333	33KΩ	2
R139, 140	ERDS2TJ472	4.7KΩ	2
R141, 142	ERDS2TJ102	1KΩ	2
R143	ERDS2TJ104	100KΩ	1
R144	ERDS2TJ473	47KΩ	1
R145	ERDS2TJ103	10KΩ	1
R146	ERDS2TJ104	100KΩ	1
R147, 148	ERDS2TJ472	4.7KΩ	2
R149, 150	ERDS2TJ102	1KΩ	2
R151	ERDS2TJ103	10KΩ	1
R152	ERDS2TJ473	47KΩ	1
R153	ERDS2TJ223	22KΩ	1
R154	ERDS2TJ102	1KΩ	1
R155	ERDS2TJ222	2.2KΩ	1
R156	ERDS2TJ221	220Ω	1
R157	ERDS2TJ473	47KΩ	1
R158, 159	ERDS2TJ102	1KΩ	2
R160	ERDS2TJ222	2.2KΩ	1
R161, 162	ERDS2TJ103	10KΩ	2
R163	ERDS2TJ472	4.7KΩ	1
R164	ERDS2TJ471	470Ω	1
R165	ERDS2TJ334	330KΩ	1
R166	ERDS2TJ332	3.3KΩ	1
R167	ERDS2TJ472	4.7KΩ	1
R168	ERDS2TJ332	3.3KΩ	1
R169	ERDS2TJ154	150KΩ	1
R170	ERDS2TJ474	470KΩ	1
R171	ERDS2TJ100	10Ω	1
R172	ERDS2TJ101	100Ω	1
R174	ERDS2TJ105	1MΩ	1
R175, 176	ERDS2TJ473	47KΩ	2
R177	ERDS2TJ223	22KΩ	1
R178	ERDS2TJ332	3.3KΩ	1
R179	ERDS2TJ472	4.7KΩ	1
R180	ERDS2TJ103	10KΩ	1
R181	ERDS2TJ473	47KΩ	1
R182	ERDS2TJ683	68KΩ	1
R183	ERDS2TJ223	22KΩ	1
R184	ERDS2TJ332	3.3KΩ	1
R185	ERDS2TJ472	4.7KΩ	1
R186	ERDS2TJ103	10KΩ	1
R187	ERDS2TJ101	100Ω	1
R190	ERDS2TJ104	100KΩ	1
R192	ERDS2TJ224	220KΩ	1
R193	ERDS2TJ154	150KΩ	1
R194	ERDS2TJ224	220KΩ	1
R195	ERDS2TJ154	150KΩ	1
R196	ERDS2TJ104	100KΩ	1
R198	ERDS2TJ224	220KΩ	1
R200	ERDS2TJ154	150KΩ	1
R201	ERDS2TJ224	220KΩ	1
R202	ERDS2TJ154	150KΩ	1
R203	ERDS2TJ224	220KΩ	1
R205, 206	ERDS2TJ334	330KΩ	2
R211	ERDS2TJ104	100KΩ	1
R217~220	ERDS2TJ104	100KΩ	4
R221, 222	ERDS2TJ472	4.7KΩ	2
R223	ERDS2TJ102	1KΩ	1
R224~226	ERDS2TJ331	330Ω	3

Ref. No.	Part No.	Description	Per/Set
R227	ERDS2TJ102	1KΩ	1
R228	ERDS2TJ331	330Ω	1
R229	ERDS2TJ223	22KΩ	1
R230	ERDS2TJ333	33KΩ	1
R231	ERDS2TJ223	22KΩ	1
R232	ERDS2TJ103	10KΩ	1
R233	ERDS2TJ223	22KΩ	1
R234	ERDS2TJ333	33KΩ	1
R235	ERDS2TJ223	22KΩ	1
R236	ERDS2TJ103	10KΩ	1
R237	ERDS2TJ333	33KΩ	1
R238	ERDS2TJ223	22KΩ	1
R239	ERDS2TJ153	15KΩ	1
R240	ERDS2TJ333	33KΩ	1
R241	ERDS2TJ223	22KΩ	1
R242	ERDS2TJ153	15KΩ	1
R243	ERDS2TJ333	33KΩ	1
R244	ERDS2TJ153	15KΩ	1
R245	ERDS2TJ223	22KΩ	1
R246	ERDS2TJ333	33KΩ	1
R247	ERDS2TJ223	22KΩ	1
R248	ERDS2TJ153	15KΩ	1
R249	ERDS2TJ223	22KΩ	1
R250	ERDS2TJ333	33KΩ	1
R251	ERDS2TJ153	15KΩ	1
R252	ERDS2TJ472	4.7KΩ	1
R253~255	ERDS2TJ473	47KΩ	3
R256	ERDS2TJ472	4.7KΩ	1
R257~259	ERDS2TJ473	47KΩ	3
R260	ERDS2TJ472	4.7KΩ	1
R261~264	ERDS2TJ473	47KΩ	4
R265	ERDS2TJ224	220KΩ	1
R266	ERDS2TJ473	47KΩ	1
R267	ERDS2TJ224	220KΩ	1
R268, 269	ERDS2TJ472	4.7KΩ	2
R270	ERDS2TJ474	470KΩ	1
R271	ERDS2TJ472	4.7KΩ	1
R272	ERDS2TJ103	10KΩ	1
R273	ERDS2TJ104	100KΩ	1
R274	ERDS2TJ683	68KΩ	1
R275	ERDS2TJ334	330KΩ	1
R276	ERDS2TJ104	100KΩ	1
R277	ERDS2TJ683	68KΩ	1
R278	ERDS2TJ334	330KΩ	1
R279, 280	ERDS2TJ224	220KΩ	2
R281	ERDS2TJ683	68KΩ	1
R282~285	ERDS2TJ334	330KΩ	4
R286	ERDS2TJ154	150KΩ	1
R287	ERDS2TJ473	47KΩ	1
R288	ERDS2TJ224	220KΩ	1
R289	ERDS2TJ473	47KΩ	1
R290	ERDS2TJ154	150KΩ	1
R291	ERDS2TJ473	47KΩ	1
R292	ERDS2TJ224	220KΩ	1
R293	ERDS2TJ473	47KΩ	1
R294	ERDS2TJ104	100KΩ	1
R295	ERDS2TJ473	47KΩ	1
R296	ERDS2TJ154	150KΩ	1
R297	ERDS2TJ473	47KΩ	1
R298~300	ERDS2TJ154	150KΩ	3
R301	ERDS2TJ222	2.2KΩ	1
R302, 303	ERDS2TJ104	100KΩ	2
R304	ERDS2TJ153	15KΩ	1
R305	ERDS2TJ104	100KΩ	1
R306	ERDS2TJ222	2.2KΩ	1
R307	ERDS2TJ101	100Ω	1
R308	ERDS2TJ153	15KΩ	1
R309	ERDS2TJ104	100KΩ	1

Ref. No.	Part No.	Description	Per/Set
R310	ERDS2TJ222	2.2KΩ	1
R311	ERDS2TJ101	100Ω	1
R312	ERDS2TJ153	15KΩ	1
R313	ERDS2TJ101	100Ω	1
R314	ERDS2TJ222	2.2KΩ	1
R315	ERDS2TJ104	100KΩ	1
R316~318	ERDS2TJ154	150KΩ	3
R319	ERDS2TJ473	47KΩ	1
R320	ERDS2TJ101	100Ω	1
R321	ERDS2TJ222	2.2KΩ	1
R322	ERDS2TJ104	100KΩ	1
R323	ERDS2TJ124	120KΩ	1
R324	ERDS2TJ474	470KΩ	1
R325	ERDS2TJ104	100KΩ	1
R326	ERDS2TJ124	120KΩ	1
R327	ERDS2TJ474	470KΩ	1
R328	ERDS2TJ104	100KΩ	1
R329	ERDS2TJ474	470KΩ	1
R330~332	ERDS2TJ473	47KΩ	3
R333~335	ERDS2TJ154	150KΩ	3
R336~338	ERDS2TJ222	2.2KΩ	3
R339	ERDS2TJ102	1KΩ	1
R340	ERDS2TJ472	4.7KΩ	1
R341	ERDS2TJ102	1KΩ	1
R342	ERDS2TJ472	4.7KΩ	1
R343	ERDS2TJ152	1.5KΩ	1
R344, 345	ERDS2TJ332	3.3KΩ	2
R346	ERDS2TJ152	1.5KΩ	1
R347	ERDS2TJ105	1MΩ	1
R348	ERDS2TJ223	22KΩ	1
R349~351	ERDS2TJ152	1.5KΩ	3
R352	ERDS2TJ223	22KΩ	1
R353, 354	ERDS2TJ105	1MΩ	2
R355	ERDS2TJ223	22KΩ	1
R356	ERDS2TJ153	15KΩ	1
R357	ERDS2TJ333	33KΩ	1
R358	ERDS2TJ223	22KΩ	1
R359	ERDS2TJ333	33KΩ	1
R360	ERDS2TJ153	15KΩ	1
R361	ERDS2TJ223	22KΩ	1
R362~365	ERDS2TJ472	4.7KΩ	4
R366~369	ERDS2TJ100	10Ω	4
R370	ERDS2TJ332	3.3KΩ	1
R371	ERDS2TJ472	4.7KΩ	1
R372	ERDS2TJ332	3.3KΩ	1
R373, 374	ERDS2TJ223	22KΩ	2
R375	ERDS2TJ154	150KΩ	1
R376	ERDS2TJ474	470KΩ	1
R377	ERDS2TJ100	10Ω	1
R378	ERDS2TJ101	100Ω	1
R380~382	ERDS2TJ103	10KΩ	3
R383~385	ERDS2TJ104	100KΩ	3
R386	ERDS2TJ331	330Ω	1
R387	ERDS2TJ153	15KΩ	1
R388	ERDS2TJ331	330Ω	1
R389	ERDS2TJ153	15KΩ	1
R390	ERDS2TJ331	330Ω	1
R391	ERDS2TJ153	15KΩ	1
R392	ERDS2TJ104	100KΩ	1
R393	ERDS2TJ102	1KΩ	1
R394	ERDS2TJ473	47KΩ	1
R395~397	ERDS2TJ274	270KΩ	3
R398	ERDS2TJ154	150KΩ	1
R399, 400	ERDS2TJ332	3.3KΩ	2
R401, 402	ERDS2TJ154	150KΩ	2
R403, 404	ERDS2TJ332	3.3KΩ	2
R405, 406	ERDS2TJ154	150KΩ	2
R407, 408	ERDS2TJ332	3.3KΩ	2

Ref. No.	Part No.	Description	Per/Set
R409, 410	ERDS2TJ154	150KΩ	2
R411	ERDS2TJ153	15KΩ	1
R412	ERDS2TJ103	10KΩ	1
R413	ERDS2TJ154	150KΩ	1
R414	ERDS2TJ153	15KΩ	1
R415	ERDS2TJ103	10KΩ	1
R416	ERDS2TJ154	150KΩ	1
R417	ERDS2TJ153	15KΩ	1
R418	ERDS2TJ103	10KΩ	1
R419	ERDS2TJ333	33KΩ	1
R420~422 ⚠	ERD2FCG220	22Ω, 1/4W, Fuse Type	3
R423	ERDS2TJ154	150KΩ	1
R424	ERDS2TJ683	68KΩ	1
R425, 426	ERDS2TJ333	33KΩ	2
R427	ERDS2TJ683	68KΩ	1
R428	ERDS2TJ332	3.3KΩ	1
R429	ERDS2TJ472	4.7KΩ	1
R430, 431	ERDS2TJ103	10KΩ	2
R432	ERDS2TJ472	4.7KΩ	1
R433	ERDS2TJ332	3.3KΩ	1
R434~436	ERDS2TJ473	47KΩ	3
R437, 438	ERDS2TJ333	33KΩ	2
R439	ERDS2TJ154	150KΩ	1
R440, 441	ERDS2TJ222	2.2KΩ	2
R442	ERDS2TJ331	330Ω	1
R443	ERDS2TJ105	1MΩ	1
R444~449	ERDS2TJ222	2.2KΩ	6
R451~453	ERDS2TJ152	1.5KΩ	3
R454, 455	ERDS2TJ223	22KΩ	2
R461~464	ERDS2TJ222	2.2KΩ	4
R465	ERDS2TJ105	1MΩ	1
R469, 470	ERDS2TJ222	2.2KΩ	2
R471~477	ERDS2TJ102	1KΩ	7
R478~481	ERDS2TJ224	220KΩ	4

CAPACITORS

Ref. No.	Part No.	Description	Per/Set
C1, 2	ECQG1H152KZ	0.0015μF	2
C3, 4	ECQG1H222KZ	0.0022μF	2
C5, 6	ECCR1H101J	100pF	2
C7	ECQG1H152KZ	0.0015μF	1
C8	ECQG1H222KZ	0.0022μF	1
C9	ECCR1H101J	100pF	1
C10	ECQG1H152KZ	0.0015μF	1
C11	ECQG1H222KZ	0.0022μF	1
C12	ECCR1H101J	100pF	1
C13	ECQG1H152KZ	0.0015μF	1
C14	ECQG1H222KZ	0.0022μF	1
C15	ECCR1H101J	100pF	1
C16	ECQG1H152KZ	0.0015μF	1
C17	ECQG1H222KZ	0.0022μF	1
C18	ECCR1H101J	100pF	1
C19	ECCR1H221J	220pF	1
C26~29	ECEA1CKA100	10μF, 16V	4
C31	ECCR1H470J	47pF	1
C32	ECQG1H472KZ	0.0047μF	1
C33	ECCR1H470J	47pF	1
C34	ECQG1H472KZ	0.0047μF	1
C35	ECCR1H470J	47pF	1
C36	ECQG1H472KZ	0.0047μF	1
C37	ECCR1H470J	47pF	1
C38	ECQG1H472KZ	0.0047μF	1
C39	ECCR1H680J	68pF	1
C40	ECQG1H682KZ	0.0068μF	1
C41	ECCR1H680J	68pF	1
C42	ECQG1H682KZ	0.0068μF	1
C43	ECCR1H680J	68pF	1
C44	ECQG1H682KZ	0.0068μF	1

Ref. No.	Part No.	Description	Per/Set
C45	ECCR1H680J	68pF	1
C46	ECQG1H682KZ	0.0068μF	1
C47~49	ECQG1H332KZ	0.0033μF	3
C50	ECQG1H472KZ	0.0047μF	1
C51, 52	ECQM1H223KV	0.022μF	2
C53, 54	ECQG1H682KZ	0.0068μF	2
C55, 56	ECCR1H220J	22pF	2
C57	ECEA1HKN010	1μF, 50V	1
C58	ECRR1H104ZF	0.1μF	1
C59	ECQV1H154JZ	0.15μF	1
C60	ECEA1HKN010	1μF, 50V	1
C61	ECQV1H473JZ	0.047μF	1
C62	ECRR1H104ZF	0.1μF	1
C63	ECEA1HKA2R2	2.2μF, 50V	1
C64	ECEA1CKA100	10μF, 16V	1
C65~68	ECCR1H101J	100pF	4
C69, 70	ECQG1H102KZ	0.001μF	2
C71, 72	ECEA1CKA470	47μF, 16V	2
C73	ECQG1H102KZ	0.001μF	1
C74, 75	ECCR1H221J	220pF	2
C76	ECEA1HKA010	1μF, 50V	1
C77	ECQG1H102KZ	0.001μF	1
C80	ECQV1H224JZ	0.22μF	1
C81	ECQG1H472KZ	0.0047μF	1
C82	ECQV1H104JZ	0.1μF	1
C83	ECCR1H101J	100pF	1
C84	ECCR1H470J	47pF	1
C85	ECEA1HKN010	1μF, 50V	1
C88	ECCR1H470J	47pF	1
C89	ECEA1HKN010	1μF, 50V	1
C90	ECCR1H101J	100pF	1
C92	ECEA1CKA101	100μF, 16V	1
C96	ECEA1CKA101	100μF, 16V	1
C100	ECKR1E473ZV	0.047μF	1
C101, 102	ECEA0JKA101	100μF, 6.3V	2
C103, 104	ECKR1E473ZV	0.047μF	2
C105	ECEA1CKA470	47μF, 16V	1
C106	ECEA1EKA4R7	4.7μF, 25V	1
C107, 108	ECEA1CKA470	47μF, 16V	2
C117	ECEA1HKA010	1μF, 50V	1
C118	ECEA1CKA100	10μF, 16V	1
C121	ECEA1EKA4R7	4.7μF, 25V	1
C122	ECKR1E473ZV	0.047μF	1
C123	ECEA1HKA010	1μF, 50V	1
C125, 126	ECQG1H152KZ	0.0015μF	2
C127	ECEA1CKA100	10μF, 16V	1
C128~130	ECCR1H470J	47pF	3
C131	ECCR1H101J	100pF	1
C132	ECEA1HKA010	1μF, 50V	1
C133	ECEA1CKA470	47μF, 16V	1
C134	ECQG1H682KZ	0.0068μF	1
C135	ECRR1H104ZF	0.1μF	1
C136	ECQG1H102KZ	0.001μF	1
C137	ECQG1H332KZ	0.0033μF	1
C138	ECEA1CKA100	10μF, 16V	1
C139	ECEA1CKA470	47μF, 16V	1
C140	ECQG1H682KZ	0.0068μF	1
C141	ECEA1CKA100	10μF, 16V	1
C142	ECKR1E473ZV	0.047μF	1
C143	ECEA1CKA100	10μF, 16V	1
C144	ECEA1HKA010	1μF, 50V	1
C145	ECEA1CKN100	10μF, 16V	1
C146	ECEA1CKA470	47μF, 16V	1
C147	ECQG1H682KZ	0.0068μF	1
C148	ECRR1H104ZF	0.1μF	1
C149	ECQG1H102KZ	0.001μF	1
C150	ECQG1H332KZ	0.0033μF	1
C151	ECEA1CKA100	10μF, 16V	1
C152	ECEA1CKA470	47μF, 16V	1
C154	ECQG1H682KZ	0.0068μF	1
C155	ECEA1HKA2R2	2.2μF, 50V	1
C156	ECKR1E473ZV	0.047μF	1
C157	ECQG1H222KZ	0.0022μF	1
C158	ECCR1H151J	150pF	1
C159	ECQG1H222KZ	0.0022μF	1
C160	ECCR1H151J	150pF	1
C161, 162	ECEA1HKN010	1μF, 50V	2
C163	ECCR1H151J	150pF	1
C164	ECQG1H152KZ	0.0015μF	1
C165	ECEA1HKN010	1μF, 50V	1
C166	ECCR1H331J	330pF	1
C167	ECQG1H222KZ	0.0022μF	1
C168	ECEA1HKN010	1μF, 50V	1
C169	ECCR1H151J	150pF	1
C170	ECQG1H152KZ	0.0015μF	1
C171	ECEA1HKN010	1μF, 50V	1
C172	ECCR1H151J	150pF	1
C173	ECQG1H152KZ	0.0015μF	1
C174	ECEA1HKN010	1μF, 50V	1
C175	ECCR1H151J	150pF	1
C176	ECQG1H152KZ	0.0015μF	1
C178	ECQG1H222KZ	0.0022μF	1
C179	ECCR1H471J	470pF	1
C180	ECCR1H331J	330pF	1
C181	ECCR1H151J	150pF	1
C182	ECEA1CKN100	10μF, 16V	1
C183	ECQV1H104JZ	0.1μF	1
C184	ECQG1H222KZ	0.0022μF	1
C185, 186	ECCR1H221J	220pF	2
C187	ECCR1H470J	47pF	1
C188	ECQV1H104JZ	0.1μF	1
C189	ECEA1CKN100	10μF, 16V	1
C190	ECQG1H222KZ	0.0022μF	1
C191, 192	ECCR1H221J	220pF	2
C193	ECCR1H470J	47pF	1
C194	ECQV1H104JZ	0.1μF	1
C195	ECEA1CKN100	10μF, 16V	1
C196, 197	ECCR1H220J	22pF	2
C198~201	ECEA1HKN010	1μF, 50V	4
C202	ECCR1H101J	100pF	1
C203	ECEA1HKA010	1μF, 50V	1
C204~206	ECCR1H100J	10pF	3
C207~209	ECCR1H220J	22pF	3
C213~218	ECQM1H223KV	0.022μF	6
C219	ECQV1H473JZ	0.047μF	1
C220	ECQM1H223KV	0.022μF	1
C221~223	ECCR1H220J	22pF	3
C231, 232	ECKR1E473ZV	0.047μF	2
C234	ECEA1HKN010	1μF, 50V	1
C235	ECQG1H472KZ	0.0047μF	1
C236	ECEA1HKA010	1μF, 50V	1
C237	ECQV1H104JZ	0.1μF	1
C238	ECEA1CKA100	10μF, 16V	1
C240~242	ECEA1HKA2R2	2.2μF, 50V	3
C243	ECEA1CKA100	10μF, 16V	1
C244~246	ECEA1HKA2R2	2.2μF, 50V	3
C247~252	ECCR1H101J	100pF	6
C253~255	ECCR1H681J	680pF	3
C256~258	ECEA1CKA470	47μF, 16V	3
C259	ECQG1H222KZ	0.0022μF	1
C260	ECCR1H101J	100pF	1
C261	ECQG1H222KZ	0.0022μF	1
C262, 263	ECCR1H101J	100pF	2
C264, 265	ECQG1H222KZ	0.0022μF	2
C267, 268	ECEA1HKA010	1μF, 50V	2
C269	ECKR1E473ZV	0.047μF	1

	Ref. No.	Part No.	Description	Per/Set
	C270	ECEA1CKA100	10μF, 16V	1
	C271	ECEA1HKA010	1μF, 50V	1
	C274~277	ECKR1E473ZV	0.047μF	4
	C280	ECKR1E473ZV	0.047μF	1
	C282, 283	ECKR1E473ZV	0.047μF	2
	C285~312	ECKR1E473ZV	0.047μF	28
	C314	ECEA1HKA010	1μF, 50V	1
	C380	ECKR1E473ZV	0.047μF	1

EXPC EXPRESSION CONTROL CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS				
	IC1	SVIGM74H04	Hex Inverters	1
	IC2~8	SVIGM5218L	Operational Amplifier	7
TRANSISTORS				
S	Q2	2SC2320LFG	2SC1310FG (SUB. Part)	1
S	Q3	2SA1015-GR	2SA933STRS (SUB. Part)	1
DIODES				
	D1, 2	MA165TA5		2
SEMI-FIXED RESISTOR				
	VR1	EVND4AA00B14	10KΩ B, Offset Adj.	1
RESISTORS				
	R1 ⚠	ERD2FCG220	22Ω, 1/4W, Fuse Type	1
	R2	ERDS2TJ102	1KΩ	1
	R3, 4	ERDS2TJ333	33KΩ	2
	R7	ERDS2TJ222	2.2KΩ	1
	R9	ERDS2TJ222	2.2KΩ	1
	R11	ERDS2TJ152	1.5KΩ	1
	R13	ERDS2TJ154	150KΩ	1
	R15	ERDS2TJ151	150Ω	1
	R16	ERDS2TJ221	220Ω	1
	R17, 18	ERDS2TJ333	33KΩ	2
	R19	ERDS2TJ102	1KΩ	1
	R20, 21	ERDS2TJ333	33KΩ	2
	R22	ERDS2TJ102	1KΩ	1
	R23, 24	ERDS2TJ333	33KΩ	2
	R25	ERDS2TJ471	470Ω	1
	R26, 27	ERDS2TJ333	33KΩ	2
	R28	ERDS2TJ471	470Ω	1
	R29, 30	ERDS2TJ333	33KΩ	2
	R31	ERDS2TJ102	1KΩ	1
	R32, 33	ERDS2TJ333	33KΩ	2
	R34	ERDS2TJ471	470Ω	1
	R35, 36	ERDS2TJ333	33KΩ	2
	R37	ERDS2TJ471	470Ω	1
	R38, 39	ERDS2TJ333	33KΩ	2
	R40	ERDS2TJ471	470Ω	1
	R41, 42	ERDS2TJ333	33KΩ	2
	R43	ERDS2TJ471	470Ω	1
	R44, 45	ERDS2TJ333	33KΩ	2
	R46	ERDS2TJ471	470Ω	1
	R47, 48	ERDS2TJ333	33KΩ	2
	R49	ERDS2TJ471	470Ω	1
	R50	ERDS2TJ333	33KΩ	1
	R51	ERDS2TJ105	1MΩ	1

	Ref. No.	Part No.	Description	Per/Set
CAPACITORS				
	C1	ECEA0JKA331	330μF, 6.3V	1
	C2	ECRR1H104ZF	0.1μF	1
	C3, 4	ECQV1H104JZ	0.1μF	2
	C6	ECRR1H104ZF	0.1μF	1
	C7	ECCR1H680J	68pF	1
	C8	ECCR1H470J	47pF	1
	C9	ECCR1H101J	100pF	1
	C10	ECQG1H102KZ	0.001μF	1
	C11	ECCR1H101J	100pF	1
	C12	ECQM1H223KV	0.022μF	1
	C13	ECQG1H102KZ	0.001μF	1
	C14	ECCR1H101J	100pF	1
	C15	ECQM1H223KV	0.022μF	1
	C16	ECQG1H152KZ	0.0015μF	1
	C17	ECCR1H151J	150pF	1
	C18	ECQV1H473JZ	0.047μF	1
	C19	ECQG1H152KZ	0.0015μF	1
	C20	ECCR1H151J	150pF	1
	C21	ECQV1H473JZ	0.047μF	1
	C22	ECQG1H222KZ	0.0022μF	1
	C23	ECCR1H221J	220pF	1
	C24	ECQV1H683JZ	0.068μF	1
	C25	ECQG1H152KZ	0.0015μF	1
	C26	ECCR1H151J	150pF	1
	C27	ECQV1H473JZ	0.047μF	1
	C28	ECQG1H152KZ	0.0015μF	1
	C29	ECCR1H151J	150pF	1
	C30	ECQV1H473JZ	0.047μF	1
	C31	ECQG1H152KZ	0.0015μF	1
	C32	ECCR1H151J	150pF	1
	C33	ECQV1H473JZ	0.047μF	1
	C34	ECQG1H152KZ	0.0015μF	1
	C35	ECCR1H151J	150pF	1
	C36	ECQV1H473JZ	0.047μF	1
	C37	ECQG1H152KZ	0.0015μF	1
	C38	ECCR1H151J	150pF	1
	C39	ECQV1H473JZ	0.047μF	1
	C40	ECQG1H152KZ	0.0015μF	1
	C41	ECCR1H151J	150pF	1
	C42	ECQV1H473JZ	0.047μF	1
	C43~46	ECRR1H104ZF	0.1μF	4
	C47	ECSF1VE225	2.2μF, 35V	1
	C48	ECQM1H103KV	0.01μF	1

DEF DIGITAL EFFECT CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS				
○	IC1	MN1911XYZ	Digital Signal Processor	1
	IC2, 3	SVIGHM65256	256K bit Partial S RAM	2
○	IC4	QSIGADEFAX0	32K bit EP ROM	1
○	IC5	QSIGADEFBX0	32K bit EP ROM	1
	IC6	MN1280R	Reset IC	1
	IC7, 8	SVIGM74H74	Dual D-type Flip-Flops	2
○	IC9	M74HC393P	4-Stage Binary Ripple Counter	1
	IC10	SVIGM74H32	Quad 2-input OR Gates	1
○	IC11	MN6470	D/A Converter	1
○	IC12	MN86081	A/D Converter	1
	IC13	SVIGM5278L05	+5V Voltage Regulator	1
	IC14~16	SVIGM5238L	Operational Amplifier	3
	IC17~19	SVIGM5218L	Operational Amplifier	3

	Ref. No.	Part No.	Description	Per/Set
	TRANSISTORS			
	Q1, 2	2SJ105GR	FET	2
	DIODES			
	D1~4	MA165TA5		4
	OSCILLATORS			
○	X1	SVQG49S3200T	32MHz, Quartz Oscillator	1
	X2	SVQG49S1000T	10MHz, Quartz Oscillator	1
	RESISTORS			
	R1~3	ERDS2TJ103	10KΩ	3
	R4	ERDS2TJ102	1KΩ	1
	R6	ERDS2TJ103	10KΩ	1
	R8~10	ERDS2TJ103	10KΩ	3
	R11	ERDS2TJ105	1MΩ	1
	R12~14	ERDS2TJ103	10KΩ	3
	R16, 17	ERDS2TJ101	100Ω	2
	R18, 19 ⚠	ERD2FCJ4R7	4.7Ω, 1/4W, Fuse Type	2
	R20	ERDS2TJ103	10KΩ	1
	R21	ERDS2TJ102	1KΩ	1
	R22	ERDS2TJ152	1.5KΩ	1
	R23	ERDS2TJ102	1KΩ	1
	R24	ERDS2TJ152	1.5KΩ	1
	R26	ERDS2TJ223	22KΩ	1
	R27	ERDS2TJ683	68KΩ	1
	R28, 29 ⚠	ERD2FCJ4R7	4.7Ω, 1/4W, Fuse Type	2
	R30	ERDS2TJ472	4.7KΩ	1
	R31	ERDS2TJ473	47KΩ	1
	R32~37	ERDS2TJ223	22KΩ	6
	R38	ERDS2TJ222	2.2KΩ	1
	R39~43	ERDS2TJ223	22KΩ	5
	R44, 45	ERDS2TJ222	2.2KΩ	2
	R46	ERDS2TJ103	10KΩ	1
	R47	ERDS2TJ223	22KΩ	1
	R48~55	ERDS2TJ103	10KΩ	8
	R56	ERDS2TJ222	2.2KΩ	1
	R57	ERDS2TJ223	22KΩ	1
	R58~61	ERDS2TJ473	47KΩ	4
	R62~66	ERDS2TJ103	10KΩ	5
	R67	ERDS2TJ472	4.7KΩ	1
	R70	ERDS2TJ332	3.3KΩ	1
	R71	ERDS2TJ272	2.7KΩ	1
	R72	ERDS2TJ103	10KΩ	1
	CAPACITORS			
	C1~6	ECRR1H104ZF	0.1μF	6
	C8	ECRR1H104ZF	0.1μF	1
	C9	ECCR1H471J	470pF	1
	C10, 11	ECCR1H030C	3pF	2
	C12	ECEA0JKA470	47μF, 6.3V	1
	C13	ECSF1EE225	2.2μF, 25V	1
	C14	ECEA0JKA221	220μF, 6.3V	1
	C15	ECRR1H104ZF	0.1μF	1
	C16	ECEA0JKA470	47μF, 6.3V	1
	C17	ECRR1H104ZF	0.1μF	1
	C18	ECEA1CKA470	47μF, 16V	1
	C19, 20	ECEA0JKA470	47μF, 6.3V	2
	C21	ECEA0JKA101	100μF, 6.3V	1
	C22	ECRR1H104ZF	0.1μF	1
	C23	ECEA0JKA470	47μF, 6.3V	1
	C24	ECRR1H104ZF	0.1μF	1
	C25	ECCR1H221J	220pF	1
	C26, 27	ECEA1CKA470	47μF, 16V	2
	C28	ECRR1H104ZF	0.1μF	1
	C29	ECQV1H224JZ	0.22μF	1
	C30	ECCR1H221J	220pF	1
	C31, 32	ECCR1H681J	680pF	2
	C34	ECEA1HKN010	1μF, 50V	1
	C35	ECQG1H152KZ	0.0015μF	1
	C36	ECCR1H331J	330pF	1
	C37	ECRR1H104ZF	0.1μF	1
	C38	ECCR1H331J	330pF	1
	C39	ECQG1H152KZ	0.0015μF	1
	C40	ECEA1HKN010	1μF, 50V	1
	C42	ECRR1H104ZF	0.1μF	1
	C43	ECQG1H682KZ	0.0068μF	1
	C44, 45	ECCR1H681J	680pF	2
	C46	ECCR1H221J	220pF	1
	C47	ECRR1H104ZF	0.1μF	1
	C48	ECCR1H221J	220pF	1
	C50, 51	ECCR1H681J	680pF	2
	C52, 53	ECCR1H101J	100pF	2
	C54	ECQG1H682KZ	0.0068μF	1
	C55	ECRR1H104ZF	0.1μF	1
	C56~59	ECCR1H471J	470pF	4
	C60	ECCR1H101J	100pF	1
	C61	ECRR1H104ZF	0.1μF	1
	C62	ECCR1H101J	100pF	1
	C63, 64	ECCR1H220J	22pF	2
	C65	ECQV1H473ZV	0.047μF	1
	C66	ECEA1HKN010	1μF, 50V	1

DRV DIGITAL REVERB CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
	INTEGRATED CIRCUITS			
	IC1	MN1280R	Reset IC	1
	IC2	SVIGHM65256	256K bit Partial S RAM	1
	IC3	SVIGMB622416	Gate Array	1
	IC4	MN8305S	A-D/D-A Converter	1
	IC5	SVIG87064073	Digital Signal Processer	1
	IC6	SVIGM5278L05	+5V Voltage Regulator	1
	IC7	SVIGM5220L	Operational Amplifier	1
	IC8~10	SVIGM5218L	Operational Amplifier	3
	IC11	SVIGLM1894N	Dynamic Noise Reduction	1
	IC12	MN74HC02S	Quad 2-input NOR Gates	1
	TRANSISTORS			
	Q1, 2	2SJ105GR	FET	2
	DIODES			
	D1~5	MA165TA5		5
	OSCILLATOR			
	X1	SVQGA20MX040	20MHz, Ceramic Oscillator	1
	SEMI-FIXED RESISTOR			
	VR1	EVND4AA00B24	20KΩ B, DRV Bias	1
	RESISTORS			
	R1	ERDS2TJ333	33KΩ	1
	R2	ERDS2TJ682	6.8KΩ	1
	R3, 4	ERDS2TJ473	47KΩ	2
	R5	ERDS2TJ393	39KΩ	1
	R6, 7	ERDS2TJ103	10KΩ	2

	Ref. No.	Part No.	Description	Per/Set
	R8	ERDS2TJ473	47KΩ	1
	R9	ERDS2TJ152	1.5KΩ	1
	R10	ERDS2TJ563	56KΩ	1
	R11	ERDS2TJ183	18KΩ	1
	R12, 13	ERDS2TJ823	82KΩ	2
	R14	ERDS2TJ153	15KΩ	1
	R15	ERDS2TJ103	10KΩ	1
	R16	ERDS2TJ472	4.7KΩ	1
	R17	ERDS2TJ153	15KΩ	1
	R18	ERDS2TJ103	10KΩ	1
	R19	ERDS2TJ472	4.7KΩ	1
	R20	ERDS2TJ682	6.8KΩ	1
	R21~23	ERDS2TJ473	47KΩ	3
	R24	ERDS2TJ682	6.8KΩ	1
	R25~27	ERDS2TJ473	47KΩ	3
	R36, 37	ERDS2TJ331	330Ω	2
	R38	ERDS2TJ102	1KΩ	1
	R39	ERDS2TJ221	220Ω	1
	R40, 41	ERDS2TJ473	47KΩ	2
	R44, 45	ERDS2TJ472	4.7KΩ	2
	R46, 47	ERDS2TJ221	220Ω	2
	R50~52 ⚠	ERD2FCJ4R7	4.7Ω, 1/4W, Fuse Type	3
	R53, 54 ⚠	ERD2FCG100	10Ω, 1/4W, Fuse Type	2
	R55	ERDS2TJ105	1MΩ	1
	R58, 59	ERDS2TJ101	100Ω	2
	R62~66	ERDS2TJ152	1.5KΩ	5
	R68~70	ERDS2TJ472	4.7KΩ	3
	R71	ERDS2TJ225	2.2MΩ	1
	R72	ERDS2TJ332	3.3KΩ	1
	R73, 74	ERDS2TJ225	2.2MΩ	2
	CAPACITORS			
	C1	ECQB1H153JZ	0.015µF	1
	C2	ECQG1H682KZ	0.0068µF	1
	C3, 4	ECCR1H471J	470pF	2
	C5	ECCR1H101J	100pF	1
	C6	ECEA1HKA010	1µF, 50V	1
	C8	ECEA1HKA010	1µF, 50V	1
	C9	ECQG1H152KZ	0.0015µF	1
	C10	ECCR1H151J	150pF	1
	C11	ECEA1HKA010	1µF, 50V	1
	C12	ECQG1H332KZ	0.0033µF	1
	C13	ECQG1H472KZ	0.0047µF	1
	C14, 15	ECCR1H471J	470pF	2
	C16	ECCR1H101J	100pF	1
	C17	ECEA1HKA010	1µF, 50V	1
	C18	ECQG1H332KZ	0.0033µF	1
	C19	ECQG1H472KZ	0.0047µF	1
	C20, 21	ECCR1H471J	470pF	2
	C22	ECCR1H101J	100pF	1
	C31, 32	ECEA1HKA010	1µF, 50V	2
	C33	ECEA1HKAR22	0.22µF, 50V	1
	C34	ECQB1H103JZ	0.01µF	1
	C35	ECEA1HKAR22	0.22µF, 50V	1
	C36	ECQB1H103JZ	0.01µF	1
	C37	ECQV1H473JZ	0.047µF	1
	C38	ECQV1H104JZ	0.1µF	1
	C39	ECQB1H103JZ	0.01µF	1
	C40	ECQG1H332KZ	0.0033µF	1
	C41	ECEA1CKA470	47µF, 16V	1
	C42	ECEA1CKA100	10µF, 16V	1
	C43	ECEA1CKA470	47µF, 16V	1
	C50~52	ECEA0JKA101	100µF, 6.3V	3
	C53, 54	ECEA0JKS331	330µF, 6.3V	2
	C55, 56	ECEA1CKA101	100µF, 16V	2
	C57	ECCR1H101J	100pF	1
	C58, 59	ECCR1H100J	10pF	2
	C60	ECKR1E473ZV	0.047µF	1
	C62, 63	ECKR1E473ZV	0.047µF	2
	C66	ECCR1H470J	47pF	1
	C67	ECRR1H104ZF	0.1µF	1
	C68	ECEA1HKN010	1µF, 50V	1
	C69	ECEA1HKA010	1µF, 50V	1
	C70	ECRR1H104ZF	0.1µF	1

MKB1 MANUAL KEYBOARD 1 CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
	INTEGRATED CIRCUITS			
	IC1	MN50020PGV	Gate Array	1
	IC2	MN1231	1K bit ROM	1
	IC3	SVIGM5218L	Operational Amplifier	1
	DIODES			
S	D1~74	MA162A	MA150IR (SUB. Part)	74
	OSCILLATOR			
	X1	EF0FC4004A3	4MHz, Ceramic Oscillator	1
	COMPONENT COMBINATION			
	Z1	EXBPI8472JM	4.7KΩ×8	1
	SEMI-FIXED RESISTOR			
	VR1	EVSG0E1B223A	22KΩ B, After Touch Adj.	1
	RESISTORS			
	R1	ERDS2TJ222	2.2KΩ	1
	R2	ERDS2TJ472	4.7KΩ	1
	R3	ERDS2TJ102	1KΩ	1
	R4~6	ERDS2TJ472	4.7KΩ	3
	CAPACITORS			
	C1	ECRR1H104ZF	0.1µF	1
	C2, 3	ECKR1E473ZV	0.047µF	2

MKB2 MANUAL KEYBOARD 2 CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
	DIODES			
S	D1~24	MA162A	MA150IR (SUB. Part)	24

PKB PEDAL KEYBOARD CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
	INTEGRATED CIRCUITS			
	IC1	MN1280R	Reset IC	1
○	IC2	D78C11AWF03	Microcomputer	1
	OSCILLATOR			
	X1	SVQGA15MX001	15MHz, Ceramic Oscillator	1

	Ref. No.	Part No.	Description	Per/Set
COMPONENT COMBINATIONS				
	Z1~3	EXBPI8332JM	3.3KΩ × 8	3
SWITCHES				
○	S1~14	QSPG1001AA	Rubber Switch (5pcs. on one)	3
RESISTORS				
	R1	ERDS2TJ102	1KΩ	1
	R10	ERDS2TJ103	10KΩ	1
	R11, 12	ERDS2TJ472	4.7KΩ	2
	R13, 14 ⚠	ERD2FCG220	22Ω, 1/4W, Fuse Type	2
	R15, 16	ERDS2TJ103	10KΩ	2
	R17	ERDS2TJ101	100Ω	1
	R18	ERDS2TJ472	4.7KΩ	1
	R19~21	ERDS2TJ103	10KΩ	3
	R22 ⚠	ERD2FCG101	100Ω, 1/4W, Fuse Type	1
	R23	ERDS2TJ184	180KΩ	1
CAPACITORS				
	C1	ECQV1H104JZ	0.1μF	1
	C2, 3	ECCR1H220J	22pF	2
	C4	ECEA0JKA101	100μF, 6.3V	1
	C5	ECQV1H104JZ	0.1μF	1
	C6	ECEA1CKA470	47μF, 16V	1

EXP EXPRESSION CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
CDS				
	CS1	SVEG5	Light Sensitive Device	1

ACP AC POWER SUPPLY CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
LINE FILTER				
	L1 ⚠	SLTGLF4	Line Filter	1
SWITCH				
	S1 [EK] [XR] ⚠ [XL] [XS] [XD] [X]	ESE37209	Voltage Selector, [EK], [XR], [XL], [XS], [XD], [X] only	1
FUSES				
	F1 [N] ⚠	XBA1C50NS5	5A, 125V, [N] only	1
	F1 [M] [MC] ⚠	XBA1C63NU100	6.3A, 125V, [M], [MC] only	1
	F1 } [EK] [XR] ⚠ [XL] [XS]	XBA2C31TB0	T3.15A, 250V } [EK], [XR], [XL], [XS], [XD], [X] only	1
	F2 [XD] [X] ⚠	XBA2C16TB0	T1.6A, 250V	1
	F2 ⚠	XBA2C16TB0	T1.6A, 250V, Other areas	1
CAPACITORS				
	C1 ⚠	ECKCVA1472MF	4700pF, Line-Capacitor	1
	C2 ⚠	ECQU2A104MN	0.1μF, 250V, Across-the Line Capacitor	1

PSS SUB POWER SUPPLY CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUIT				
	IC1	SVIGM5F7812	Voltage Regulator	1
TRANSISTORS				
	Q1, 2	2SD1266		2
S	Q3, 5	2SC2320LFG	2SC1310FG (SUB. Part)	2
	Q4, 7	2SJ105GR	FET	2
S	Q6, 8	2SA1015-GR	2SA933STRS (SUB. Part)	2
	Q9	2SB941		1
DIODES				
	D1, 2 ⚠	SVDGGP20GL	Rectifier	2
	D5, 6, 9, 10 ⚠	SVDGERA1502Y	Rectifier	4
	D7, 8	MA4200	Zener, 20V	2
	D11	MA165TA5		1
RELAY				
○	RL1	QSYGR3211737	Relay	1
FUSES				
	F1, 2 ⚠ [M] [MC]	XBA1C20NU100	2A, 125V, [M], [MC] only	2
RESISTORS				
	R1, 2 ⚠	ERX2ANJP1R0S	1Ω, 2W, Flame-Proof	2
	R3	ERDS2TJ471	470Ω	1
	R4	ERDS2TJ822	8.2KΩ	1
	R5	ERDS2TJ223	22KΩ	1
	R6	ERDS2TJ103	10KΩ	1
	R7	ERDS2TJ471	470Ω	1
	R8 ⚠	ERX1ANJP1R0S	1Ω, 1W, Flame-Proof	1
	R9	ERDS2TJ223	22KΩ	1
CAPACITORS				
	C1	ECEA1VU332	3300μF, 35V	1
	C2	ECEA1VU222	2200μF, 35V	1
	C3~6	ECEA1HKA010	1μF, 50V	4
	C7	ECEA1EU101	100μF, 25V	1
	C8	ECEA1HKA010	1μF, 50V	1

PSM MAIN POWER SUPPLY CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS				
	IC1	SVIGM5291P	Switching Regulator	1
	IC2	SVIGM5F7815	Voltage Regulator	1
	IC3	SVIGM5F7915	Voltage Regulator	1
TRANSISTORS				
	Q1	2SB953AQP		1
S	Q2	2SA1015-GR	2SA933STRS (SUB. Part)	1
S	Q3	2SC2320LFG	2SC1310FG (SUB. Part)	1
DIODES				
	D1, 4	MA165TA5		2
	D2	SVDGERC9102		1
	D3	MA2062LF	Zener, 6.2V	1

Ref. No.	Part No.	Description	Per/Set
COIL			
L1	SLCG3A121T	Coil	1
RESISTORS			
R1 ⚠	ERX1ANJPR22S	0.22Ω, 1W, Flame-Proof	1
R2	ERDS2TJ471	470Ω	1
R3	ERDS2TJ152	1.5KΩ	1
R4	ERDS2TJ103	10KΩ	1
R5	ER0S2CKF1001	1KΩ, ±1%	1
R6	ER0S2CKF3571	3.57KΩ, ±1%	1
R7 ⚠	ERG1ANJP221S	220Ω, 1W, Flame-Proof	1
R8, 9	ERDS2TJ101	100Ω	2
R10	ERDS2TJ223	22KΩ	1
R11	ERDS2TJ473	47KΩ	1
R12	ERDS2TJ103	10KΩ	1
R14	ERDS2TJ103	10KΩ	1
R15	ERDS2TJ223	22KΩ	1
R16	ERDS2TJ103	10KΩ	1
R17	ERDS2TJ102	1KΩ	1
CAPACITORS			
C1	ECEA1EU471	470μF, 25V	1
C2	ECCR1H471J	470pF	1
C3	ECEA1HKA2R2	2.2μF, 50V	1
C4, 5	ECEA0JU222	2200μF, 6.3V	2
C6	ECKR1E473ZV	0.047μF	1
C7~10	ECEA1EKA470	47μF, 25V	4
C11	ECEA1CKA100	10μF, 16V	1

PA POWER AMPLIFIER CIRCUIT

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1, 2	SVIGS4221M2M	Power Amplifier	2
DIODES			
D1, 2, 4, 5, 8, 9, 11, 12 ⚠	SVDGS3V20-15	Rectifier	8
RESISTORS			
R1	ERDS2TJ333	33KΩ	1
R2	ERDS2TJ103	10KΩ	1
R3	ERDS2TJ222	2.2KΩ	1
R4	ERDS2TJ393	39KΩ	1
R5	ERDS2TJ472	4.7KΩ	1
R6, 7	ERDS2TJ222	2.2KΩ	2
R8	ERDS2TJ224	220KΩ	1
R9	ERDS2TJ103	10KΩ	1
R11	ERDS2TJ681	680Ω	1
R12, 13	ERDS2TJ102	1KΩ	2
R14 ⚠	ERD50FJ4R7	4.7Ω, 1/2W, Flame-Proof	1
R15 ⚠	ERD2FCG101	100Ω, 1/4W, Fuse Type	1
R16 ⚠	ERD50FJ4R7	4.7Ω, 1/2W, Flame-Proof	1
R17, 18	ERDS2TJ222	2.2KΩ	2
R19	ERDS2TJ472	4.7KΩ	1
R20	ERDS2TJ563	56KΩ	1
R21	ERDS2TJ222	2.2KΩ	1
R23	ERDS2TJ183	18KΩ	1
R24	ERDS2TJ223	22KΩ	1
R27	ERDS2TJ333	33KΩ	1
R28	ERDS2TJ103	10KΩ	1
R29	ERDS2TJ222	2.2KΩ	1
R30	ERDS2TJ393	39KΩ	1
R31	ERDS2TJ472	4.7KΩ	1
R32, 33	ERDS2TJ222	2.2KΩ	2
R34	ERDS2TJ103	10KΩ	1
R35	ERDS2TJ224	220KΩ	1
R36	ERDS2TJ681	680Ω	1
R37, 38	ERDS2TJ102	1KΩ	2
R39 ⚠	ERD50FJ4R7	4.7Ω, 1/2W, Flame-Proof	1
R40 ⚠	ERD2FCG101	100Ω, 1/4W, Fuse Type	1
R41 ⚠	ERD50FJ4R7	4.7Ω, 1/2W, Flame-Proof	1
R42, 43	ERDS2TJ222	2.2KΩ	2
R44	ERDS2TJ472	4.7KΩ	1
R45	ERDS2TJ393	39KΩ	1
R46	ERDS2TJ222	2.2KΩ	1
R47	ERDS2TJ103	10KΩ	1
R48	ERDS2TJ333	33KΩ	1
CAPACITORS			
C1	ECQM1H153KV	0.015μF	1
C2	ECCR1H221J	220pF	1
C3	ECEA1EKA100	10μF, 25V	1
C4	ECEA1HU470	47μF, 50V	1
C5	ECEA1HKA4R7	4.7μF, 50V	1
C6	ECQV1H104JZ	0.1μF	1
C7	ECEA1HU470	47μF, 50V	1
C8	ECQV1H104JZ	0.1μF	1
C9	ECEA1HU470	47μF, 50V	1
C10	ECEA1EKA100	10μF, 25V	1
C11	ECQV1H104JZ	0.1μF	1
C12	ECEA1HKN010	1μF, 50V	1
C13	ECES1HU103U	10000μF, 50V	1
C14, 15	ECEA50Y3R3	3.3μF, 50V	2
C16	ECQM1H153KV	0.015μF	1
C17	ECCR1H221J	220pF	1
C18	ECEA1EKA100	10μF, 25V	1
C19	ECEA1HU470	47μF, 50V	1
C20	ECEA1HKA4R7	4.7μF, 50V	1
C21	ECQV1H104JZ	0.1μF	1
C22	ECEA1HU470	47μF, 50V	1
C23	ECQV1H104JZ	0.1μF	1
C24	ECEA1HU470	47μF, 50V	1
C25	ECEA1EKA100	10μF, 25V	1
C27	ECCR1H221J	220pF	1
C28	ECQM1H153KV	0.015μF	1
C29	ECES1HU103U	10000μF, 50V	1
C30 ⚠	ECQE2A104MW	0.1μF, 250V	1
C31, 32	ECEA50Y22	22μF, 50V	2

FDC FD CONTROL CIRCUIT

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	SVIGD72067C	Floppy Disk Controller	1
IC2	SVIGM74H02	Quad 2-input NOR Gates	1
IC3	SVIGM74H00	Quad 2-input NAND Gates	1
IC4	SVIGM74H14	Hex Schmitt-Trigger Inverter	1
IC5	SVIGM74H04	Hex Inverters	1
OSCILLATOR			
X2	SVQG49S3200T	32MHz, Quartz Oscillator	1

Ref. No.	Part No.	Description	Per/Set
COMPONENT COMBINATIONS			
Z1, 2	EXBPI8103JM	10KΩ×8	2
Z3	EXBPI8102JM	1KΩ×8	1
RESISTORS			
R1~4	ERDS2TJ472	4.7KΩ	4
R5, 6	ERDS2TJ153	15KΩ	2
CAPACITORS			
C1, 2	ECBA1H100J	10pF	2
C6	ECEA0JKA331	330μF, 6.3V	1
C7~11	ECRR1H104ZF	0.1μF	5

CPL UPPER CONTROL PANEL LEFT CIRCUIT

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	SVIGM603A121	Gate Array	1
IC2~4	SVIGM74LS07	Hex Buffers (O.C.)	3
TRANSISTORS			
Q1~4	2SA830SB		4
DIODES			
D1~16, 19~64	MA165TA5		62
D66~78, 80, 83~91, 93, 103, 104, 119~123	LN282R	LED (Red)	31
D79, 92, 94~102, 105~118	LN382G	LED (Green)	25
COMPONENT COMBINATION			
Z1	EXBPI8103JM	10KΩ×8	1
SWITCHES			
S2~16, 19~24	SSHG1045A	Push Switch	61
RESISTORS			
R10~13	ERDS2TJ103	10KΩ	4
R14	ERDS2TJ184	180KΩ	1
R15	ERDS2TJ221	220Ω	1
R16	ERDS2TJ103	10KΩ	1
R17~21	ERDS2TJ152	1.5KΩ	5
R22~38	ERDS2TJ470	47Ω	17
CAPACITORS			
C2	ECRR1H104ZF	0.1μF	1
C3	ECEA0JKA101	100μF, 6.3V	1
C4	ECCR1H101J	100pF	1
C5	ECEA1HKA010	1μF, 50V	1
C6~8	ECRR1H104ZF	0.1μF	3
C9	ECCR1H331J	330pF	1

ESW ENCODER SWITCH

Ref. No.	Part No.	Description	Per/Set
SWITCH			
S1	SSRG110A	Encoder Switch	1

CPSL LOWER CONTROL PANEL LEFT CIRCUIT

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	SVIGM603A121	Gate Array	1
IC2~4	SVIGM74LS07	Hex Buffers (O.C.)	3
TRANSISTORS			
Q1~5	2SA830SB		5
DIODES			
D1~76, 78~82, 151	MA165TA5		82
D83~98, 114~145	SEL2210SM	LED (Red)	48
D99~102, 104~113, 148	LN282R	LED (Red)	15
D103, 146, 147, 149	LN382G	LED (Green)	4
COMPONENT COMBINATION			
Z1	EXBPI8103JM	10KΩ×8	1
SWITCHES			
S2~76, 78~82, 151	SSHG1045A	Push Switch	81
RESISTORS			
R10~13	ERDS2TJ103	10KΩ	4
R14	ERDS2TJ184	180KΩ	1
R15	ERDS2TJ221	220Ω	1
R16	ERDS2TJ103	10KΩ	1
R17~21	ERDS2TJ152	1.5KΩ	5
R22~40	ERDS2TJ470	47Ω	19
CAPACITORS			
C3	ECEA0JKA101	100μF, 6.3V	1
C4	ECCR1H101J	100pF	1
C5	ECEA1HKA010	1μF, 50V	1
C6~8	ECRR1H104ZF	0.1μF	3
C9	ECCR1H331J	330pF	1

CPC UPPER CONTROL PANEL CENTER CIRCUIT

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	SVIGM603A121	Gate Array	1
IC2	SVIGM74LS07	Hex Buffers (O.C.)	1
TRANSISTORS			
Q1~6	2SA830SB		6

Ref. No.	Part No.	Description	Per/Set
DIODES			
D1~62	MA165TA5		62
D63~73, 75~79, 85, 86	LN282R	LED (Red)	18
D74, 80~84	LN382G	LED (Green)	6
COMPONENT COMBINATION			
Z1	EXBPI8103JM	10KΩ×8	1
SWITCHES			
S2~62	SSHG1045A	Push Switch	61
VARIABLE RESISTOR			
○ VR1	QRVG20N01B14	10KΩ B, LCD Contrast	1
RESISTORS			
R10~13	ERDS2TJ103	10KΩ	4
R14	ERDS2TJ184	180KΩ	1
R15	ERDS2TJ221	220Ω	1
R16	ERDS2TJ103	10KΩ	1
R17~21	ERDS2TJ152	1.5KΩ	5
R26~29	ERDS2TJ470	47Ω	4
R32~35	ERDS2TJ470	47Ω	4
R38	ERDS2TJ222	2.2KΩ	1
R39	ERDS2TJ473	47KΩ	1
R40	ERDS2TJ103	10KΩ	1
CAPACITORS			
C2	ECRR1H104ZF	0.1μF	1
C3	ECEA0JKA101	100μF, 6.3V	1
C4	ECCR1H101J	100pF	1
C5	ECEA1HKA010	1μF, 50V	1
C6	ECRR1H104ZF	0.1μF	1

CPR UPPER CONTROL PANEL RIGHT CIRCUIT

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	SVIGM603A121	Gate Array	1
IC2~5	SVIGM74LS07	Hex Buffers (O.C.)	4
TRANSISTORS			
Q1~4	2SA830SB		4
DIODES			
D1~84	MA165TA5		84
D85~108, 140~163	SEL2210SM	LED (Red)	43
D109~127	LN282R	LED (Red)	19
D128~139	LN382G	LED (Green)	12
SWITCHES			
S2~84	SSHG1045A	Push Switch	83

Ref. No.	Part No.	Description	Per/Se
RESISTORS			
R2~13	ERDS2TJ103	10KΩ	12
R14	ERDS2TJ184	180KΩ	1
R15	ERDS2TJ221	220Ω	1
R16	ERDS2TJ103	10KΩ	1
R17~21	ERDS2TJ152	1.5KΩ	5
R22~43	ERDS2TJ470	47Ω	22
CAPACITORS			
C2	ECRR1H104ZF	0.1μF	1
C3	ECEA0JKA101	100μF, 6.3V	1
C4	ECCR1H101J	100pF	1
C5	ECEA1HKA010	1μF, 50V	1
C6~8	ECRR1H104ZF	0.1μF	3
C9	ECCR1H681J	680pF	1

■ WIRING PARTS

Ref. No.	Part No.	Description	Per/Se
○ W1	QEXG04008SSA	Connector with Wire	1
○ W2, 8, 25	QEXG14003SSA	Connector with Wire	3
○ W3	QEXG04012SSA	Connector with Wire	1
○ W4	QEXG16003SSA	Connector with Wire	1
○ W5	QEXG05004SSA	Connector with Wire	1
○ W6	QEXG16002SSA	Connector with Wire	1
W7	SWKG168SSA	Connector with Wire	1
○ W9	QEXG11001STA	Connector with Wire	1
○ W10	QEXG04003STA	Connector with Wire	1
○ W11	QEXG12002SSA	Connector with Wire	1
○ W12	QEXG03001STA	Connector with Wire	1
○ W13	QEXG09001ZA	Connector with Wire	1
○ W14	QEXG14001SSA	Connector with Wire	1
○ W15	QEXG04006LTA	Connector with Wire	1
○ W16	QEXG04007ZB	Connector with Wire	1
W17	SWKG08115SSA	Connector with Wire	1
○ W18	QEXG14002SSA	Connector with Wire	1
○ W19	QEXG13001SSA	Connector with Wire	1
○ W20	QEXG16001STA	Connector with Wire	1
○ W21	QEXG05001STA	Connector with Wire	1
○ W22	QEXG15001SSA	Connector with Wire	1
W23	SWKG08132SSA	Connector with Wire	1
W24	SWKG06117SSA	Connector with Wire	1
○ W26	QEXG13004ZA	Connector with Wire	1
W27	SWKG0878SSA	Connector with Wire	1
○ W28	QEXG11003SSA	Connector with Wire	1
W29	SWKG0712SSA	Connector with Wire	1
○ W30	QEXG13002SSA	Connector with Wire	1
○ W31	QEXG04010LSA	Connector with Wire	1
○ W32	QEXG12003SSA	Connector with Wire	1
○ W33	QEXG13003ZA	Connector with Wire	1
○ W34	QEXG03003ZA	Connector with Wire	1
○ W35	QEXG05003ZA	Connector with Wire	1
○ W36	QEXG10001ZB	Connector with Wire	1
○ W37, 41	QEXG04005LSA	Connector with Wire	2
○ W38	QEXG03002SSA	Connector with Wire	1
○ W39	QEXG04009ZA	Connector with Wire	1
○ W40	QEXG05002SSA	Connector with Wire	1
○ W42	QEXG04004STA	Connector with Wire	1
W43	SWKG0675SSA	Connector with Wire	1
W44	SWKG1350SSA	Connector with Wire	1
○ W45	QEXG06002STA	Connector with Wire	1

REPLACEMENT PARTS LIST……Cabinet and Chassis Parts

Notes:

1. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
2. ○ mark are new parts.
3. For part No. with area mark, check the area when placing an order.
4. There are two identical models are available as SX-GN9 and SX-GN9K and all specifications are the same in both models except cabinet parts and panel parts. Identify an unit with model number which available on the name plate on the rear board and order correct parts.

SX-GN9K CABINET & CHASSIS PARTS

Ref. No.	Part No.	Description	Per/Set
		POWER SWITCH	
○ S1 ⚠	QSPG1003AA	Power Switch	1
		SPEAKERS	
SP1	EAS30PL142B	30cm, 8Ω	1
SP2~4	EAS20PL255C	20cm, 8Ω	3
○ SP5, 6	SASG25KH01-F	2.5cm, 4Ω	2
SP7, 8	EAS15S06A	6×13cm, 16Ω	2
		TRANSFORMERS	
○ T1 N ⚠	QTPG1S001A	Power Transformer, [N] only	1
○ T1 MC ⚠	QTPG1S003A	Power Transformer, [MC] only	1
○ T1 ⚠	QTPG1S002A	Power Transformer, Except [N], [MC]	1
○ T2 ⚠	QTPG1J001A	Power Transformer	1
		POWER CORD, PLUGS	
PC1 N ⚠	SJAG11	AC Power Cord, [N] only	1
PC1 MC ⚠	SJAG22	AC Power Cord, [MC] only	1
PC1 XL XR ⚠	SJAG23	AC Power Cord, [XL], [XR] only	1
PC1 EK XS XD ⚠	SJAG25	AC Power Cord, [EK], [XS], [XD] only	1
PC1 ⚠	SJAG24	AC Power Cord, Others	1
PC2 X ⚠	SJP5213-1	Attachment Plug, [X] only	1
PC3 XD ⚠	SJPG1350A	Power Plug, [XD] only	1
		POWER INDICATOR	
D1	LN29RP	LED, Power Indicator	1
		CABINET AND OTHERS	
○ 1	QGAG2001AA	Clear Panel, Music Rack	1
○ 2	QGKG0013AA	Ornament	1
○ 3-1	QMFG1007AA	Felt	1
○ 3-2	QMFG1008AA	Felt	2
○ 4	QKQGA001CA	Top Cover Ass'y	1
○ 4-1	[QGKG0005BA	Ornament (Left)	1
○ 4-2	QGKG0006BA	Ornament (Right)	1
○ 4-3	QGKG0001BA	Ornament (Front)	1
○ 4-4	QMRG2001AA	Ornament	1
4-5	SGBG150A	Technics Badge	1
○ 5	QKQGF001AA	Sliding Cover Ass'y	1
○ 5-1	[QGKG0010AA	Ornament	1
5-2	SBEG30A	Lock	1
5-3	SBEG40C	Staple	1
5-4	SBHG6007-1	Hinge	3
5-5	SHRG9930A	Catch, Guide Rail	10
○ 5-6	QMFG1001AA	Felt	2
5-7	SHSG119	Felt	6
6	SBEG60A	Key	1
○ 7	QGKG0002AA	Ornament	1
9	SHSG1830A	Felt	2

(SX-GN9K)

Ref. No.	Part No.	Description	Per/Set
○ 10	QGPG0001AA	Upper Control Panel	1
○ 11	QKWG001AA	Display Cover Panel	1
○ 12	QGPG0002AA	Lower Control Panel, Left	1
○ 13 N	QGPG0003AA	Lower Control Panel, Right	1
○ 13	QGPG0003AD	Lower Control Panel, Right	1
○ 14	QMFG4006BB	Felt	4
○ 15	QMFG4004BB	Felt	1
○ 16	QMFG4005BB	Felt	2
○ 16-1	QMFG4011AA	Felt	1
○ 17	QMFG4007BB	Felt	1
○ 18	QMFG4001AA	Felt	1
○ 19	QMFG4002AA	Felt	1
○ 20	SBNG4060B	Knob, Tempo/Program	1
21	SBNG7031A	Knob, Main Volume	1
22	SBCG110B	Button, Power Switch	1
23	SBNG4070A	Bender Wheel	1
24	SBNG9040A	Lever	1
25	SHSG6220A	Felt	1
26	QMFG4008AA	Felt	1
27	SUSG612A	Spring	1
28	SHRG9920A	Spacer	1
○ 29	QGKG0007AA	Ornament, Keyboard	1
○ 30	QGKG0008AA	Jack Panel	1
31	SUWG3000A	Bracket	2
32	SUWG3010A	Bracket	2
33	SUWG3020A	Bracket	2
34	SUWG3031A	Bracket	2
○ 35	QEXG13004ZA	Cable with Bracket	1
○ 36	QEXG13003ZA	Cable with Bracket	1
36-1	[SHRG1160A	Bushing	2
○ 37	QKSGE001AA	Front Panel	1
38	SHSG3050A	Felt	1
39	SMKG1583A	Jack Panel	1
40	SBNG4010A	Knob, Mic Volume	1
41	SHR401-1	Latch	2
42	SXVG3031B	Knee Lever Ass'y	1
42-1	[SSLG1005A	Leaf Switch	1
42-2	SSHG1020A	Push Switch	1
43	SGXG1100K	Ornament, Expression	1
44	SHRG2120C	Foot	4
45	SKEG7640A	Guide Rail	1
46	SKEG7650A	Guide Rail	1
47	SKEG7660A	Guide Rail	1
48	SKEG7670A	Guide Rail	1
49	SHSG3571A	Felt	2
50	SHRG8130A	Speaker Cover	1
51	SHSG9140A	Sound Absorbing Material	3
52	SHRG1110A	Cord Clamper	1
53	SHRG1120A	Cord Clamper	1
54	SXVG6030A	Exprssion Pedal Ass'y	1
54-1	[XAMR55P	Lamp	1
54-2	RJS205ZA	Lamp Socket	1
54-3	SHGG908	Lamp Holding Rubber	1
54-4	SSHG14	Foot Switch	2
○ 55	QKQGD001AA	Rear Board (Upper)	1
○ 56 EK X XL XR XS XD	QKUG1001BA	Rear Board (Lower), [EK], [X], [XL], [XR], [XS], [XD] only	1

(SX-GN9K)

Ref. No.	Part No.	Description	Per/Set
○ 56	QKUG1001AA	Rear Board (Lower), Others	1
○ 57	QQLG005AA	Label (VOLT ADJ.)	1
58	SHGG8510A	Spacer	1
59	SHRG1030A	Cord Band	1
60	SHRGA9060A	Cord Clamper	2
61	SUWG219	Binder	8
62	SHRG9620A	Cord Clamper	1
		PEDAL KEYBOARD	
○ 63	STBG1164C	Long Key (Gray)	8
64	STBG2052A	Short Key (Black)	5
65	STBG2310A	Full-Bass Pedal	1
66	SGXG1390A	Ornament	1
67	SHSG4770A	Felt	1
○ 68	QMRG2005AA	Insulator	1
69	SHSG1600B	Felt	1
70	SHSG1460A	Felt	14
71	SUSG180A	Spring	14
72	SHGG8130A	Rubber	14
73	SHRG9240A	Spacer	14
		MANUAL KEYBOARD	
○ 74	STBGA1160A	White Key (C & F Keys)	8
○ 75	STBGA1170A	White Key (D Key)	4
○ 76	STBGA1180A	White Key (E & B Keys)	8
○ 77	STBGA1190A	White Key (G Key)	4
○ 78	STBGA1200A	White Key (A Key)	4
○ 79	STBGA1210A	White Key (Top Octave C Key)	1
○ 80	STBG2930A	Black Key	20
○ 81	STBG9420A	Key Support	3
○ 82	STBG9440A	Key Support	1
○ 83	QMBG001BA	Spring	49
84	SHGG9050A	Key Guide Rubber	49
○ 85	STBG8100C	After Sensor	1
○ 86	STBG9410A	P.C.B. Holder	3
○ 87	STBG9430A	P.C.B. Holder	1
○ 88	SSPG1A	Actuater	3
○ 89	SSPG2A	Actuater	1
○ 90	QMFG1006AB	Felt	1
○ 91	SHRGA5810A	Membrane Sheet	3
○ 92	SHRGA5820A	Membrane Sheet	1
		DIGITAL DISK RECORDER	
93	SUVG1291A	Top Cover	1
94	SFDG30A	DDR Drive Unit	1
95	SUVG1281A	Bottom Cover	1
96	SHRG9850A	P.C.B. Holder	3
		BENCH	
97	SKZGD820A	Top Cover Ass'y	1
97-1	[SBHG50D	Hinge	2
97-2	SBLG70A	Stay	1
98	SKZGC860B	Box	1
99	SKZGC471B	Leg	4
100	SBEG190A	Spanner	1
		SCREW & WASHERS	
N1	SNEG1890A	Screw with Washer	4
N2	XTS4+12A	Screw	26
N3	XTB35+12A	Screw	28
N4	XTWSG2	Screw with Washer	12
N5	SNEG2400A	Screw with Washer	2
N6	XTB4+12A	Screw	24

(SX-GN9K)

Ref. No.	Part No.	Description	Per/Set
N7	XTW3+10Q	Screw	65
N8	XNS9	Nut	1
N9	XYN5+C10	Screw with Washer	6
N10	SNEG740A	Screw	2
N11	XTS3+6B	Screw	2
N12	XYN4+F40	Screw with Washer	1
N13	SNEG2630A	C-Ring	1
N14	SNEG2690A	Nut	1
N15	SNEG2700A	Washer	1
N16	XTB3+5C	Screw	11
N17	XTW3+8JFZ	Screw	1
N18	XTT4+10AFZ	Screw	3
N19	XTS35+12A	Screw	19
N20	XTS3+12A	Screw	3
N21	XTS3+10AFVC	Screw	6
N22	XTW3+10JFZ	Screw	5
N23	XTT35+10AFVC	Screw	12
N24	XTT4+16AFZ	Screw	6
N25	XTT4+30A	Screw	2
N26	XTB35+12A	Screw	4
N27	SNEG2270A	Screw with Washer	4
N28	SNEG770A	Washer	2
N29	SNE4021-1	Nut	1
N30	XNS12FZ	Nut	2
N31	XTN2+10FFX	Screw	1
N32	XYN3+C12	Screw with Washer	3
N33	XYN3+F16FZ	Screw with Washer	2
N34	XTB3+8BFVC	Screw	2
N35	XTB35+20A	Screw	14
N36	XYN4+F20FZ	Screw with Washer	10
N37	XTB35+14AFZ	Screw	10
N38	XYN3+F20FZ	Screw with Washer	2
N39	XYN5+C25FZ	Screw with Washer	9
N40	SNEG150B	Washer	9
N41	XTB35+25A	Screw	8
N42	XTB3+14AFZ	Screw	4
N43	XTB3+6B	Screw	11
N44	XTT4+14A	Screw	25
N45	XNG5BS	Nut	14
N46	SNEG360A	Bolt	14
N47	XTV3+10G	Screw	1
N48	SNE499-1	Nut	16
N49	XTN26+6B	Screw	2
N50	XTV3+10C	Screw	2
N51	XYN4+F30	Screw with Washer	4
N52	XTT4+30AFZ	Screw	18
N53	XYN4+F10FZ	Screw with Washer	4
N54	XYN5+F30	Screw with Washer	3
N55	XSS3+6FZ	Screw	4
N56	XTS3+14A	Screw	4
N57	XNH10G	Nut	4
N58	XWB10B	Washer	4
N59	XTW3+6J	Screw	12
N60	XTW3+10JFVC	Screw	28
N61	XTB35+14AFZ	Screw	2
N62	XTT4+16AFZ	Screw	2
N63	XTW3+20Q	Screw	4
N64	XTB4+14A	Screw	2
N65	SNEG260B	Nut	2
N66	XSB4+8FZ	Screw	2

SX-GN9 CABINET & CHASSIS PARTS

	Ref. No.	Part No.	Description	Per/Set
	POWER SWITCH			
○	S1 ⚠	QSPG1003AA	Power Switch	1
	SPEAKERS			
	SP1	EAS30PL142B	30cm, 8Ω	1
	SP2, 3, 4	EAS20PL255C	20cm, 8Ω	3
○	SP5, 6	SASG25KH01-F	2.5cm, 4Ω	2
	SP7, 8	EAS15S06A	6×13cm, 16Ω	2
	TRANSFORMERS			
○	T1 N ⚠	QTPG1S001A	Power Transformer, [N] only	1
○	T1 MC ⚠	QTPG1S003A	Power Transformer, [MC] only	1
○	T1 ⚠	QTPG1S002A	Power Transformer, Except [N],[MC]	1
○	T2 ⚠	QTPG1J001A	Power Transformer	1
	POWER CORD, PLUGS			
	PC1 N ⚠	SJAG11	AC Power Cord, [N] only	1
	PC1 MC ⚠	SJAG22	AC Power Cord, [MC] only	1
	PC1 XL XR ⚠	SJAG23	AC Power Cord, [XL],[XR] only	1
	PC1 EK XS XD ⚠	SJAG25	AC Power Cord, [EK],[XS],[XD] only	1
	PC1 ⚠	SJAG24	AC Power Cord, Others	1
	PC2 X ⚠	SJP5213-1	Attachment Plug, [X] only	1
	PC3 XD ⚠	SJPG1350A	Power Plug, [XD] only	1
	POWER INDICATOR			
	D1	LN29RP	LED, Power Indicator	1
	CABINET AND OTHERS			
○	1	QGAG2004AA	Clear Panel, Music Rack	1
○	2	QGAG1001AA	Ornament	1
	3	SBLG230B	Stay	2
○	4	QKQGA003AA	Top Cover Ass'y	1
	4-1	SHRG9301A	Sleeve	2
○	5	QKQGF001AB	Sliding Cover Ass'y	1
○	5-1	QGKG0010AB	Ornament	1
	5-2	SBEG30A	Lock	1
	5-3	SBEG40A	Staple	1
	5-4	SBHG6007-1	Hinge	3
	5-5	SHRG9930A	Catch, Guide Rail	10
○	5-6	QMFG1001AA	Felt	2
	5-7	SHSG119	Felt	6
	5-8	SGBG150A	Badge	1
	6	SBEG60A	Key	1
○	7	QGKG0002AA	Ornament	1
○	7 N	QGKG0002AB	Ornament	1
	8-1	SGBG140A	Badge	1
○	8-2	QKQGZ019AA	Bracket	1
	9	SHSG1830A	Felt	2
○	10	QGPG0001AA	Upper Control Panel	1
○	10 N	QGPG0001AC	Upper Control Panel	1
○	11	QKWG001AA	Display Cover Panel	1
○	12	QGPG0002AA	Lower Control Panel, Left	1
○	12 N	QGPG0002AC	Lower Control Panel, Left	1
○	13	QGPG0003AD	Lower Control Panel, Right	1
○	13 N	QGPG0003AB	Lower Control Panel, Right	1
○	14	QMFG4006BB	Felt	4
○	15	QMFG4004BB	Felt	1
○	16	QMFG4005BB	Felt	2
○	16-1	QMFG4011AA	Felt	1
○	17	QMFG4007BB	Felt	1
○	18	QMFG4001AA	Felt	1

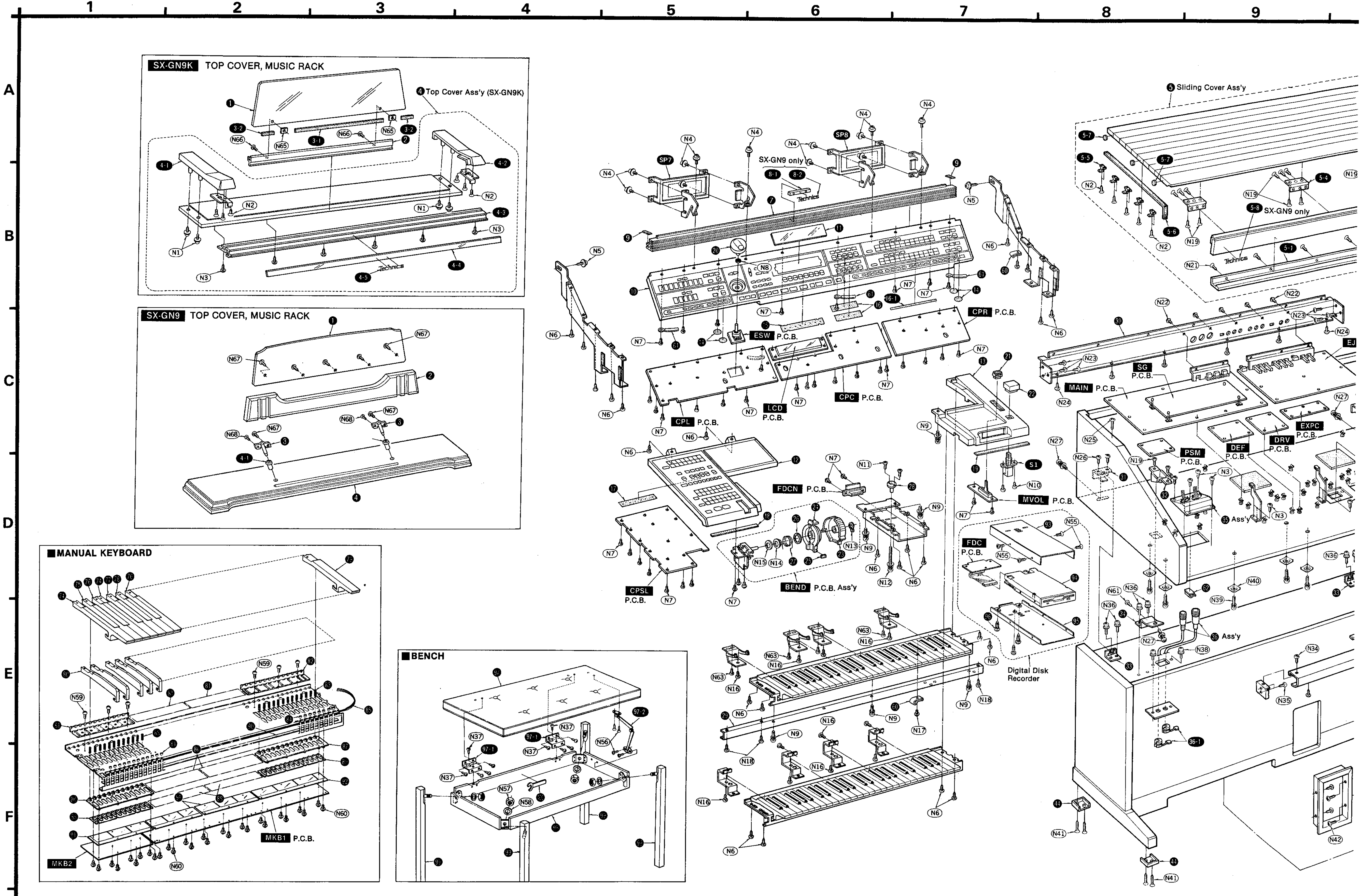
(SX-GN9)

	Ref. No.	Part No.	Description	Per/Set
○	19	QMFG4002AA	Felt	1
○	20	SBNG4060B	Knob, Tempo/Program	1
	21	SBNG7031A	Knob, Main Volume	1
	22	SBCG110B	Button, Power Switch	1
	23	SBNG4070A	Bender Wheel	1
	24	SBNG9040A	Lever	1
	25	SHSG6220A	Felt	1
	26	QMFG4008AA	Felt	1
	27	SUSG612A	Spring	1
	28	SHRG9920A	Spacer	1
○	29	QGKG0007AA	Ornament, Keyboard	1
○	30	QGKG0008AB	Jack Panel	1
	31	SUWG3000A	Bracket	2
	32	SUWG3010A	Bracket	2
	33	SUWG3020A	Bracket	2
	34	SUWG3031A	Bracket	2
○	35	QEXG13004ZA	Cable with Bracket	1
○	36	QEXG13003ZA	Cable with Bracket	1
	36-1	SHRG1160A	Bushing	2
○	37	QKSGE003AA	Front Panel	1
	38	SHSG3050A	Felt	1
	39	SMKG1583A	Jack Panel	1
	40	SBNG4010A	Knob, Mic Volume	1
	41	SHR401-1	Latch	2
	42	SXVG3031B	Knee Lever Ass'y	1
	42-1	SSLG1005A	Leaf Switch	1
	42-2	SSHG1020A	Push Switch	1
	43	SGXG1100A	Ornament, Expression	1
	44	SHRG2250A	Foot	4
	45	SKEG7640A	Guide Rail	1
	46	SKEG7650A	Guide Rail	1
	47	SKEG7660A	Guide Rail	1
	48	SKEG7670A	Guide Rail	1
	49	SHSG3571A	Felt	2
	50	SHRG8130A	Speaker Cover	1
	51	SHSG9140A	Sound Absorbing Material	3
	52	SHRG1110A	Cord Clamper	1
	53	SHRG1120A	Cord Clamper	1
	54	SXVG6030A	Exprssion Pedal Ass'y	1
	54-1	XAMR55P	Lamp	1
	54-2	RJS205ZA	Lamp Socket	1
	54-3	SHGG908	Lamp Holding Rubber	1
	54-4	SSHG14	Foot Switch	2
○	55	QKQGD001AB	Rear Board (Upper)	1
○	56 EK X XL XR XS XD	QKUG1001BB	Rear Board (Lower), [EK], [X], [XL], [XR], [XS], [XD] only	1
○	56	QKUG1001AB	Rear Board (Lower), Others	1
○	57	SGKG3190A	Label (VOLT ADJ.)	1
	58	SHGG8510A	Spacer	1
	59	SHRG1030A	Cord Band	1
	60	SHRGA9060A	Cord Clamper	2
	61	SUWG219	Binder	8
	62	SHRG9620A	Cord Clamper	1
	PEDAL KEYBOARD			
○	63	STBG1164A	Long Key (Brown)	8
	64	STBG2052A	Short Key (Black)	5
	65	STBG2310A	Full-Bass Pedal	1
	66	SGXG1390A	Ornament	1
	67	SHSG4770A	Felt	1
○	68	QMRG2005AA	Insulator	1
	69	SHSG1600B	Felt	1
	70	SHSG1460A	Felt	14
	71	SUSG180A	Spring	14
	72	SHGG8130A	Rubber	14
	73	SHRG9240A	Spacer	14

	Ref. No.	Part No.	Description	Per/Set
		MANUAL KEYBOARD		
○	74	STBGA1160A	White Key (C & F Keys)	8
○	75	STBGA1170A	White Key (D Key)	4
○	76	STBGA1180A	White Key (E & B Keys)	8
○	77	STBGA1190A	White Key (G Key)	4
○	78	STBGA1200A	White Key (A Key)	4
○	79	STBGA1210A	White Key (Top Octave C Key)	1
○	80	STBG2930A	Black Key	20
○	81	STBG9420A	Key Support	3
○	82	STBG9440A	Key Support	1
○	83	QMBG001BA	Spring	49
	84	SHGG9050A	Key Guide Rubber	49
○	85	STBG8100C	After Sensor	1
○	86	STBG9410A	P.C.B. Holder	3
○	87	STBG9430A	P.C.B. Holder	1
○	88	SSPG1A	Actuater	3
○	89	SSPG2A	Actuater	1
○	90	QMFG1006AB	Felt	1
○	91	SHRGA5810A	Membrane Sheet	3
○	92	SHRGA5820A	Membrane Sheet	1
		DIGITAL DISK RECORDER		
	93	SUVG1291A	Top Cover	1
	94	SFDG30A	DDR Drive Unit	1
	95	SUVG1281A	Bottom Cover	1
	96	SHRG9850A	P.C.B. Holder	3
		BENCH		
	97	SKZGD050A	Top Cover Ass'y	1
	97-1	SBHG50B	Hinge	2
	97-2	SBLG70A	Stay	1
○	98	SKZG060C	Box	1
○	99	SKZGD70C	Leg	4
	100	SBEG190A	Spanner	1
		SCREW & WASHERS		
	N2	XTS4+12A	Screw	20
	N3	XTB35+12A	Screw	22
	N4	XTWSG2	Screw with Washer	12
	N5	SNEG2400A	Screw with Washer	2
	N6	XTB4+12A	Screw	24
	N7	XTW3+10Q	Screw	65
	N8	XNS9	Nut	1
	N9	XYN5+C10	Screw with Washer	6
	N10	SNEG740A	Screw	2
	N11	XTS3+6B	Screw	2
	N12	XYN4+F40	Screw with Washer	1
	N13	SNEG2630A	C-Ring	1
	N14	SNEG2690A	Nut	1
	N15	SNEG2700A	Washer	1
	N16	XTB3+5C	Screw	11
	N17	XTW3+8JFZ	Screw	1
	N18	XTT4+10AFZ	Screw	3
	N19	XTS35+12A	Screw	19
	N20	XTS3+12A	Screw	3
	N21	XTS3+10AFVC	Screw	6
	N22	XTW3+10JFVC	Screw	5
	N23	XTT35+10AFVC	Screw	12
	N24	XTT4+16AFVC	Screw	6
	N25	XTT4+30A	Screw	2
	N26	XTB35+12A	Screw	4
	N27	SNEG2270A	Screw with Washer	4
	N28	SNEG770A	Washer	2
	N29	SNE4021-1	Nut	1
	N30	XNS12FZ	Nut	2
	N31	XTN2+10FFX	Screw	1
	N32	XYN3+C12	Screw with Washer	3
	N33	XYN3+F16FZ	Screw with Washer	2
	N34	XTB3+8BFVC	Screw	2
	N35	XTB35+20A	Screw	14
	N36	XYN4+F20FZ	Screw with Washer	10
	N37	XTB35+14FVC	Screw	10
	N38	XYN3+F20FZ	Screw with Washer	2
	N39	XYN5+C25FZ	Screw with Washer	9
	N40	SNEG150B	Washer	9
	N41	XTB35+25A	Screw	8
	N42	XTB3+14AFZ	Screw	4
	N43	XTB3+6B	Screw	11
	N44	XTT4+14A	Screw	25
	N45	XNG5BS	Nut	14
	N46	SNEG360A	Bolt	14
	N47	XTV3+10G	Screw	1
	N48	SNE499-1	Nut	16
	N49	XTN26+6B	Screw	2
	N50	XTV3+10C	Screw	2
	N51	XYN4+F30	Screw with Washer	4
	N52	XTT4+30AFVC	Screw	18
	N53	XYN4+F10FVC	Screw with Washer	4
	N54	XYN5+F30	Screw with Washer	3
	N55	XSS3+6FZ	Screw	4
	N56	XTS3+14A	Screw	4
	N57	XNH10G	Nut	4
	N58	XWB10B	Washer	4
	N59	XTW3+6J	Screw	12
	N60	XTW3+10JFVC	Screw	28
	N61	XTB35+14AFZ	Screw	2
	N62	XTT4+16AFZ	Screw	2
	N63	XTW3+20Q	Screw	4
	N64	XTB4+14A	Screw	2
	N67	XTT4+14AFVC	Screw	7
	N68	XTB3+14AFVC	Screw	2

EXPLODED VIEWS OF CABINET

Note: The cabinet assembly parts will not be supplied as repair parts.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Top Cover Ass'y (SX-GN9K)
Sliding Cover Ass'y
SX-GN9 only
Technics
SP7
SP8
ESW P.C.B.
LCD P.C.B.
CPC P.C.B.
CPL P.C.B.
CPR P.C.B.
FDCN P.C.B.
MVOL P.C.B.
CPSL P.C.B.
BEND P.C.B. Ass'y
FDC P.C.B.
Digital Disk Recorder
SG P.C.B.
MAIN P.C.B.
PSM P.C.B.
DEF P.C.B.
DRV P.C.B.
EXPC P.C.B.
EJ
S1
Ass'y
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MKB2
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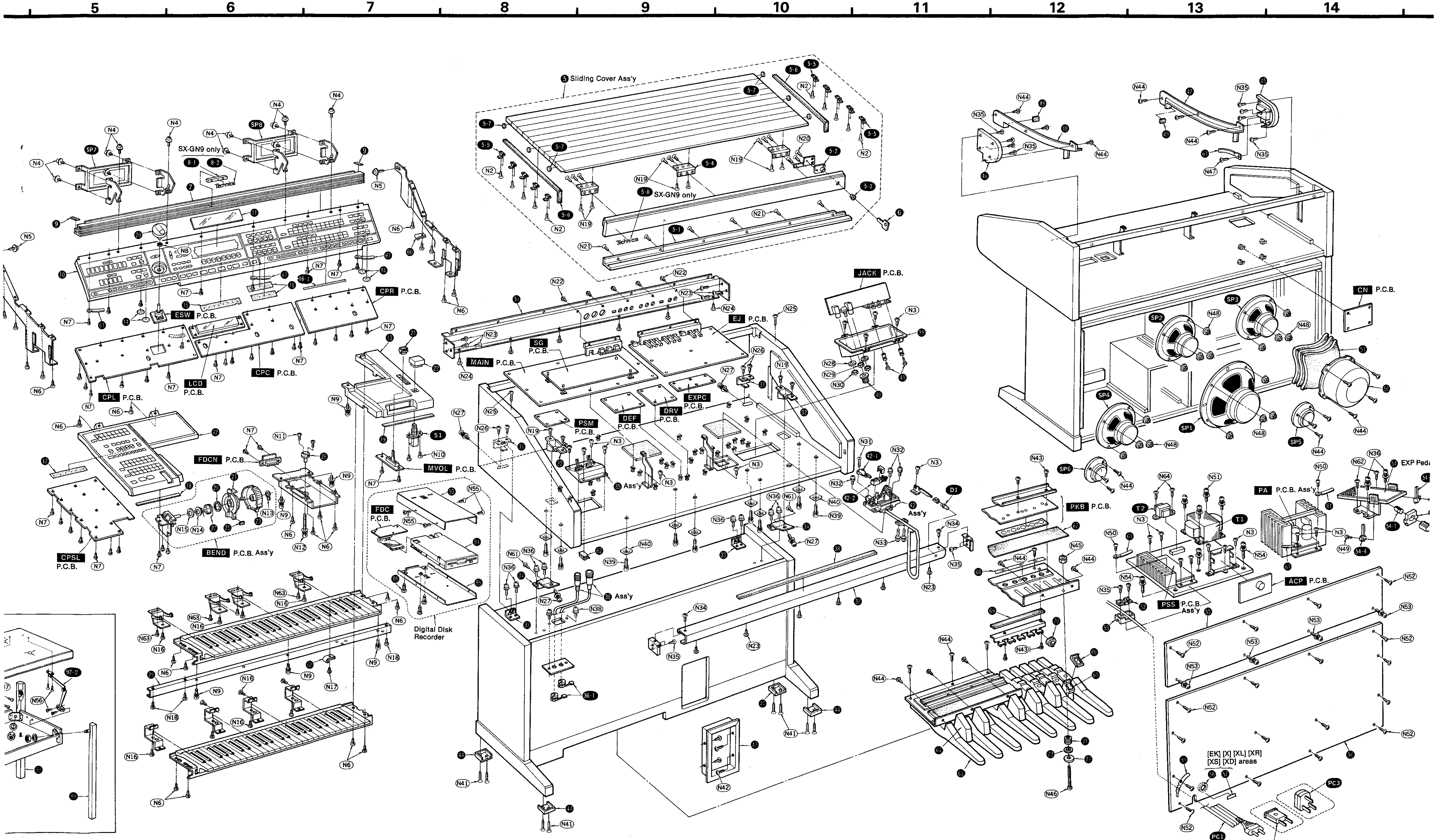
SX-GN9K TOP COVER, MUSIC RACK

SX-GN9 TOP COVER, MUSIC RACK

■MANUAL KEYBOARD

■BENCH

Note: The cabinet assembly parts will not be supplied as repair parts.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Sliding Cover Ass'y
SX-GN9 only
SX-GN9 only
Technics
JACK P.C.B.
CN P.C.B.
EJ P.C.B.
SG P.C.B.
MAIN P.C.B.
CPR P.C.B.
ESW P.C.B.
LCD P.C.B.
CPC P.C.B.
CPL P.C.B.
FDCN P.C.B.
MVOL P.C.B.
FDC P.C.B.
BEND P.C.B. Ass'y
CPSL P.C.B.
Digital Disk Recorder
PSM P.C.B.
DEF P.C.B.
DRV P.C.B.
EXPC P.C.B.
Ass'y
Ass'y
Ass'y
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PA P.C.B. Ass'y
EXP Peda
ACP P.C.B.
PSS P.C.B. Ass'y
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SP2
SP3
SP4
SP5
SP6
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T2
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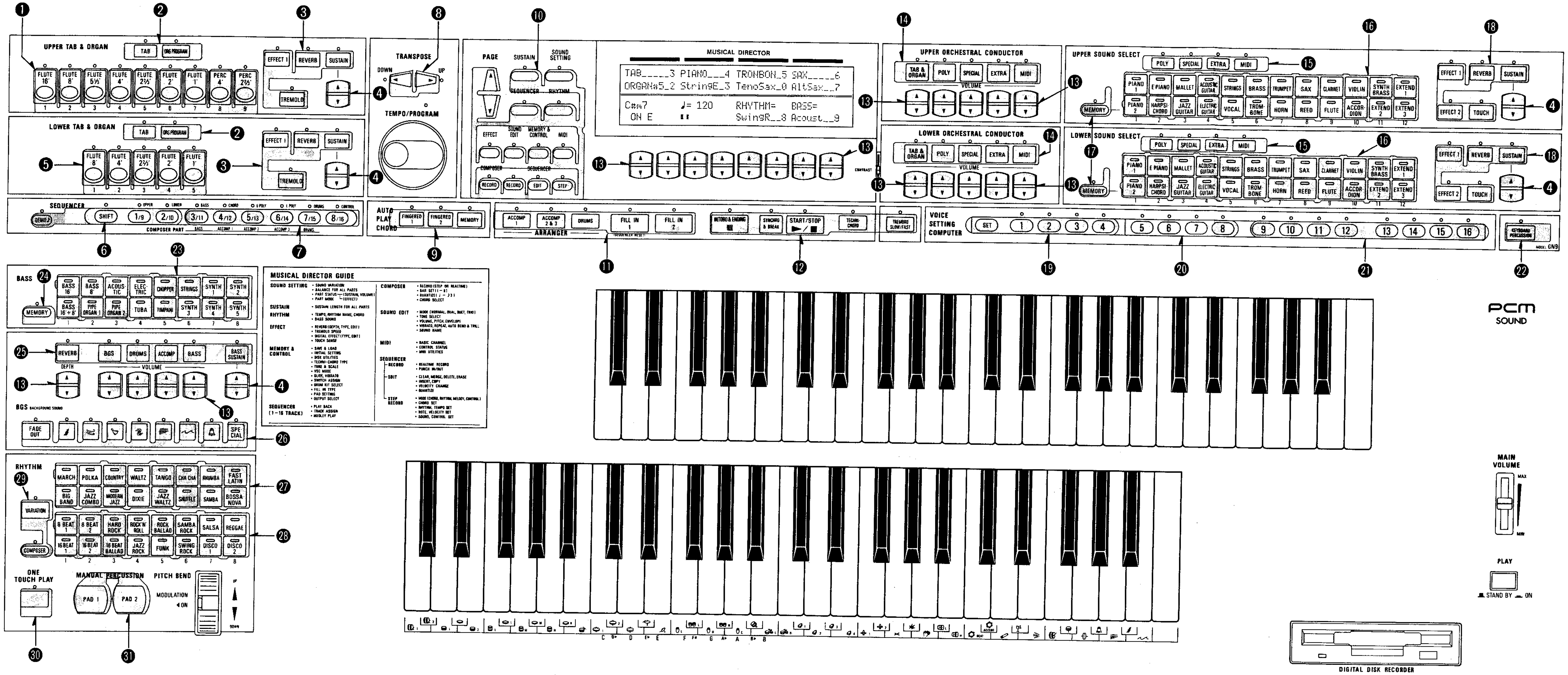
D1
PC1
PC2
PC3
[EK] [X] [XL] [XR] [XS] [XD] areas
[X] area only

■ BUTTON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LOWER TAB & ORGAN
TRANSPOSE
DOWN
UP
TEMPO/PROGRAM
PAGE
SUSTAIN
SOUND SETTING
SEQUENCER
RHYTHM
EFFECT
SOUND EDIT
MEMORY & CONTROL
MIDI
COMPOSER
MUSICAL DIRECTOR
UPPER ORCHESTRAL CONDUCTOR
UPPER SOUND SELECT
LOWER ORCHESTRAL CONDUCTOR
LOWER SOUND SELECT
VOLUME
MEMORY
SEQUENCER
DEMO
SHIFT
COMPOSER PART
AUTO PLAY CHORD
FINGERED 1
FINGERED 2
ARRANGER
FILL IN 1
FILL IN 2
INTRO & ENDING
SYNCHRO & BREAK
START/STOP
TECHNI CHORD
VOICE SETTING COMPUTER
SET
KEYBOARD PERCUSSION
BASS
MUSICAL DIRECTOR GUIDE
REVERB
BGS
DRUMS
ACCOMP
BASS SUSTAIN
DEPTH
BGS BACKGROUND SOUND
FADE OUT
SPECIAL
RHYTHM
VARIATION
COMPOSER
ONE TOUCH PLAY
MANUAL PERCUSSION
PAD 1
PAD 2
PITCH BEND
MODULATION
PCM SOUND
MAIN VOLUME
MAX
MIN
PLAY
STAND BY ON
DIGITAL DISK RECORDER
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SX-GN9K BUTTON

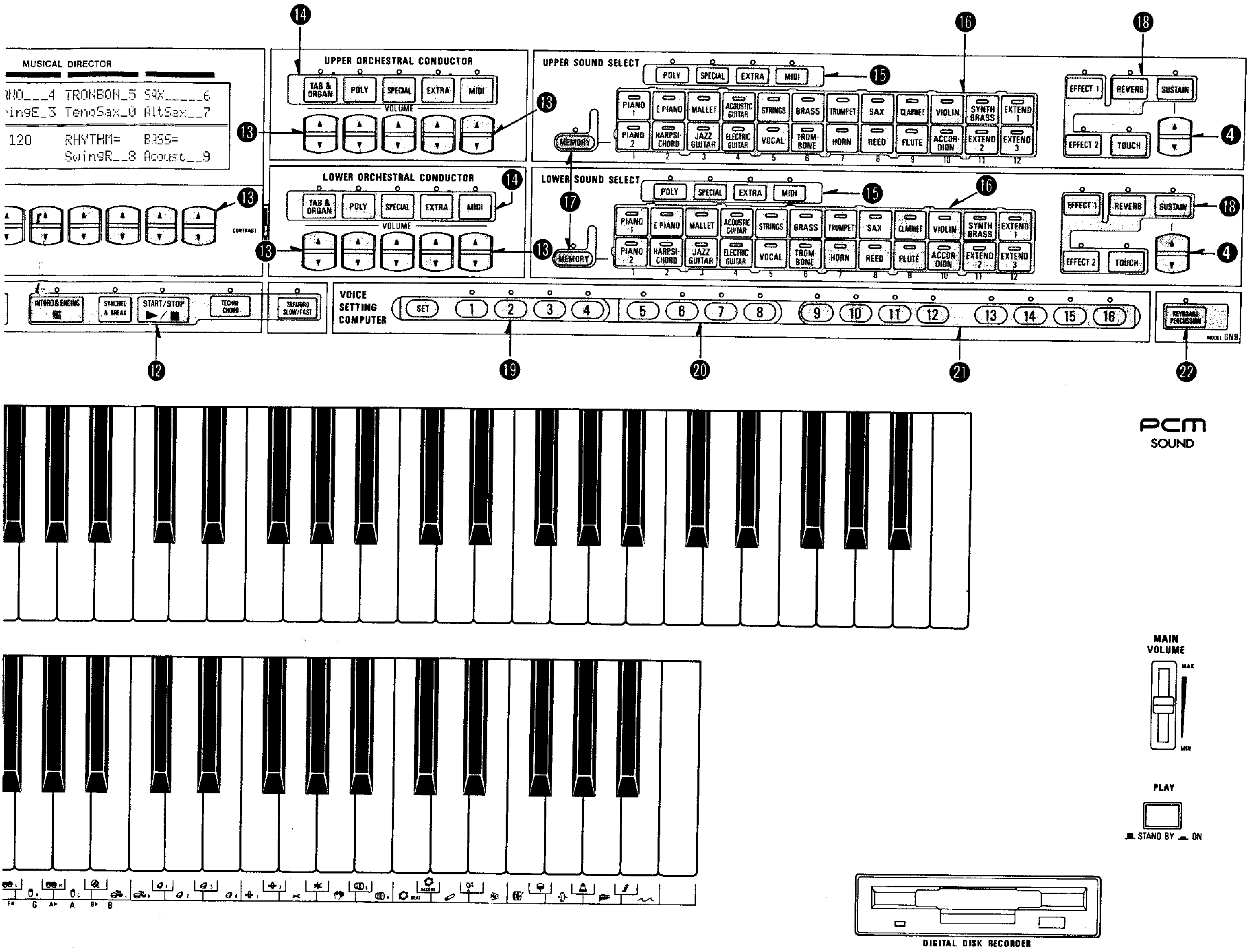
Ref. No.	Part No.	Description	Per/Set
○ 1	QGUG1009AA01	Button	1
○ 2	QGUG1008AA01	Button	2
○ 3	QGUG1011AA01	Button	2
○ 4	QGUG1027AB01	Button	5
○ 5	QGUG1010BA01	Button	1
○ 6	QGUG1020AA01	Button	1
○ 7	QGUG1005AA01	Button	1
○ 8	QGUG1012AA01	Button	1
○ 9	QGUG1014AA01	Button	1
○ 10	QGUG1013AA01	Button	1
○ 11	QGUG1021AA01	Button	1
○ 12	QGUG1022AA01	Button	1
○ 13	QGUG1027AA01	Button	23
○ 14	QGUG1015AA01	Button	2
○ 15	QGUG1018AA01	Button	2
○ 16	QGUG1028AA01	Button	2
○ 17	QGUG1017AA01	Button	2
○ 18	QGUG1019AA01	Button	2

Ref. No.	Part No.	Description	Per/Set
○ 19	QGUG1023AA01	Button	1
○ 20	QGUG1016AA01	Button	1
○ 21	QGUG1024AA01	Button	1
○ 22	QGUG1025AA01	Button	1
○ 23	QGUG1029AA03	Button	1
○ 24	QGUG1007AA01	Button	1
○ 25	QGUG1006AA01	Button	1
○ 26	QGUG1004AA01	Button	1
○ 27	QGUG1029AA02	Button	1
○ 28	QGUG1029AA01	Button	1
○ 29	QGUG1003AA01	Button	1
○ 30	QGUG1001AA	Button	1
○ 31	QGUG1002AA01	Button	1

SX-GN9 BUTTON

Ref. No.	Part No.	Description	Per/Set
○ 1	QGUG1009AA01	Button	1
○ 2	QGUG1008AA01	Button	2
○ 3	QGUG1011AA01	Button	2
○ 4	QGUG1027AB01	Button	5
○ 5	QGUG1010BA01	Button	1
○ 6	QGUG1020AA01	Button	1
○ 7	QGUG1005AA01	Button	1
○ 8	QGUG1012AA01	Button	1
○ 9	QGUG1014AA01	Button	1
○ 10	QGUG1013AA01	Button	1
○ 11	QGUG1021AA01	Button	1
○ 12	QGUG1022AA01	Button	1
○ 13	QGUG1027AA01	Button	23
○ 14	QGUG1015AA01	Button	2
○ 15	QGUG1018AA01	Button	2
○ 16	QGUG1028AA01	Button	2
○ 16 N	QGUG1028AB01	Button	2
○ 17	QGUG1017AA01	Button	2

Ref. No.	Part No.	Description	Per/Set
○ 18	QGUG1019AA01	Button	2
○ 19	QGUG1023AA01	Button	1
○ 20	QGUG1016AA01	Button	1
○ 21	QGUG1024AA01	Button	1
○ 22	QGUG1025AA01	Button	1
○ 23	QGUG1029AA03	Button	1
○ 23 N	QGUG1029AB03	Button	1
○ 24	QGUG1007AA01	Button	1
○ 25	QGUG1006AA01	Button	1
○ 26	QGUG1004AA01	Button	1
○ 27	QGUG1029AA02	Button	1
○ 27 N	QGUG1029AB02	Button	1
○ 28	QGUG1029AA01	Button	1
○ 28 N	QGUG1029AB01	Button	1
○ 29	QGUG1003AA01	Button	1
○ 30	QGUG1001AA	Button	1
○ 31	QGUG1002AA01	Button	1


MUSICAL DIRECTOR
UPPER ORCHESTRAL CONDUCTOR
TAB & ORGAN
POLY
SPECIAL
EXTRA
MIDI
VOLUME
UPPER SOUND SELECT
PIANO 1
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MALLET
ACOUSTIC GUITAR
STRINGS
BRASS
TRUMPET
SAX
CLARINET
VIOLIN
SYNTH BRASS
EXTEND 1
PIANO 2
HARPSI-CHORD
JAZZ GUITAR
ELECTRIC GUITAR
VOCAL
TROM-BONE
HORN
REED
FLUTE
ACCOR-DION
EXTEND 2
EXTEND 3
MEMORY
EFFECT 1
REVERB
SUSTAIN
EFFECT 2
TOUCH
LOWER ORCHESTRAL CONDUCTOR
LOWER SOUND SELECT
CONTRAST
INTRO & ENDING
SYNCHRO & BREAK
START/STOP
TECHNI CHORD
TREMOLO SLOW/FAST
VOICE SETTING COMPUTER
SET
KEYBOARD PERCUSSION
MODEL GN9
PCM SOUND
MAIN VOLUME
MAX
MIN
PLAY
STAND BY ON
DIGITAL DISK RECORDER
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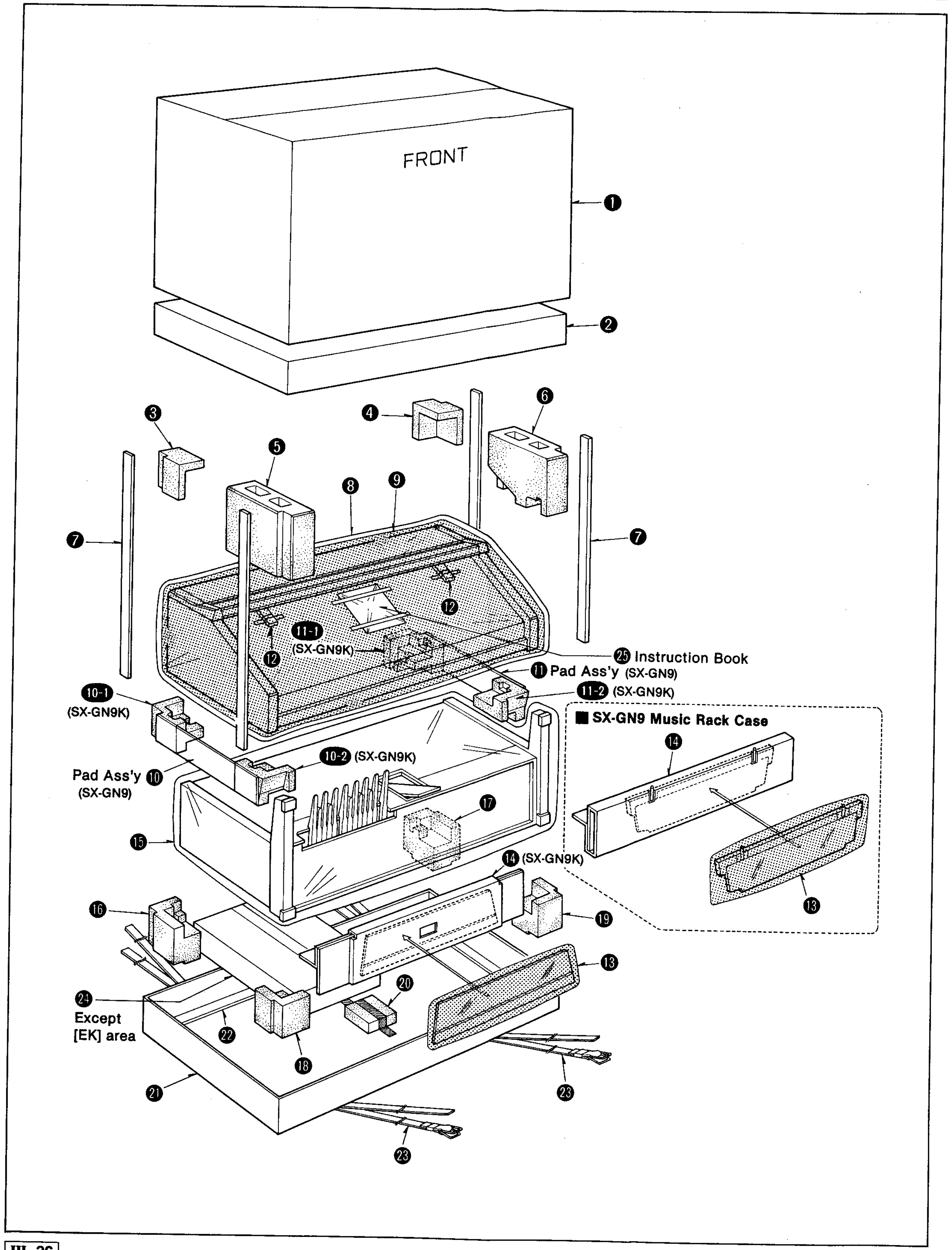
SX-GN9 BUTTON

	Ref. No.		Part No.	Description	Per/Set
○	1		QGUG1009AA01	Button	1
○	2		QGUG1008AA01	Button	2
○	3		QGUG1011AA01	Button	2
○	4		QGUG1027AB01	Button	5
○	5		QGUG1010BA01	Button	1
○	6		QGUG1020AA01	Button	1
○	7		QGUG1005AA01	Button	1
○	8		QGUG1012AA01	Button	1
○	9		QGUG1014AA01	Button	1
○	10		QGUG1013AA01	Button	1
○	11		QGUG1021AA01	Button	1
○	12		QGUG1022AA01	Button	1
○	13		QGUG1027AA01	Button	23
○	14		QGUG1015AA01	Button	2
○	15		QGUG1018AA01	Button	2
○	16		QGUG1028AA01	Button	2
○	16	N	QGUG1028AB01	Button	2
○	17		QGUG1017AA01	Button	2

	Ref. No.		Part No.	Description	Per/Set
○	18		QGUG1019AA01	Button	2
○	19		QGUG1023AA01	Button	1
○	20		QGUG1016AA01	Button	1
○	21		QGUG1024AA01	Button	1
○	22		QGUG1025AA01	Button	1
○	23		QGUG1029AA03	Button	1
○	23	N	QGUG1029AB03	Button	1
○	24		QGUG1007AA01	Button	1
○	25		QGUG1006AA01	Button	1
○	26		QGUG1004AA01	Button	1
○	27		QGUG1029AA02	Button	1
○	27	N	QGUG1029AB02	Button	1
○	28		QGUG1029AA01	Button	1
○	28	N	QGUG1029AB01	Button	1
○	29		QGUG1003AA01	Button	1
○	30		QGUG1001AA	Button	1
○	31		QGUG1002AA01	Button	1

PACKING


FRONT
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⑪-1 (SX-GN9K)
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㉕ Instruction Book
⑪ Pad Ass'y (SX-GN9)
⑪-2 (SX-GN9K)
⑩-1 (SX-GN9K)
⑩-2 (SX-GN9K)
Pad Ass'y ⑩ (SX-GN9)
■ SX-GN9 Music Rack Case
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⑭ (SX-GN9K)
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SX-GN9K PACKING PARTS

	Ref. No.	Part No.	Description	Per/Set
○	1	QPGG0004AA	Carton Box	1
○	2	QPGG0007AA	Top Case	1
○	3	QPNG0020AA	Pad	1
○	4	QPNG0021AA	Pad	1
○	5	QPNG0018AA	Pad	1
○	6	QPNG0019AA	Pad	1
○	7	QPQG002AA	Prop	4
	8	SPHG220A	Polyethylene Bag	1
	9	SPHG620A	Protection Sheet	1
○	10-1	QPNG0016AA	Pad	1
○	10-2	QPNG0014AA	Pad	1
○	11-1	QPNG0017AA	Pad	1
○	11-2	QPNG0015AA	Pad	1
	12	SPNG5161A	Spacer	2
	13	SPHG2020A	Protection Sheet	1
○	14	QPGG0005AA	Music Rack Case	1
	15	SPHG770A	Polyethylene Bag	1
○	16	QPNG0024AA	Pad	1
○	17	QPNG0025AA	Pad	1
○	18	QPNG0022AA	Pad	1
○	19	QPNG0023AA	Pad	1
	20	SPNG5749A	Pad	1
○	21	QPGG0006AA	Bottom Case	1
○	22	QPQG001AA	Frame	1
	23	SPSG40A	Band	4
	24	SPEG1165A	Packing Case, Bench (Except [EK])	1
			INSTRUCTION BOOK	
○	25 N	QQFGGN9KAA	Instruction Book, [N] only	1
○	25 EN	QQFGGN9KBA	Instruction Book, [EN] only	1
○	25 EK EP X XL XR XS XD	QQFGGN9KCA	Instruction Book, [EK], [EP], [X], [XL], [XR], [XS], [XD] only	1
○	25 EZ EW EI EB EF EH	QQFGGN9KDA	Instruction Book, [EZ], [EW], [EI], [EB], [EF], [EH] only	1

SX-GN9 PACKING PARTS

	Ref. No.	Part No.	Description	Per/Set
○	1	QPGG0017AA	Carton Box	1
○	2	QPGG0022AA	Top Case	1
○	3	QPNG0020AA	Pad	1
○	4	QPNG0021AA	Pad	1
○	5	QPNG0029AA	Pad	1
○	6	QPNG0030AA	Pad	1
○	7	QPQG005AA	Prop	4
	8	SPHG220A	Polyethylene Bag	1
	9	SPHG620A	Protection Sheet	1
○	10	QPNG0027AA	Pad	1
○	11	QPNG0028AA	Pad	1
	12	SPNG5161A	Spacer	2
	13	SPHG2020A	Protection Sheet	1
○	14	SPNG2024A	Music Rack Case	1
	15	SPHG770A	Polyethylene Bag	1
○	16	QPNG0033AA	Pad	1
○	17	QPNG0034AA	Pad	1
○	18	QPNG0031AA	Pad	1
○	19	QPNG0032AA	Pad	1
	20	SPNG5749A	Pad	1
○	21	QPGG0021AA	Bottom Case	1
○	22	QPQG004AA	Frame	1
	23	SPSG40A	Band	4
	24	SPEG1134B	Packing Case, Bench (Except [EK])	1
			INSTRUCTION BOOK	
○	25 N	QQFGGN9KAA	Instruction Book, [N] only	1
○	25 EN	QQFGGN9KBA	Instruction Book, [EN] only	1
○	25 EK EP X XL XR XS XD	QQFGGN9KCA	Instruction Book, [EK], [EP], [X], [XL], [XR], [XS], [XD] only	1
○	25 EZ EW EI EB EF EH	QQFGGN9KDA	Instruction Book, [EZ], [EW], [EI], [EB], [EF], [EH] only	1